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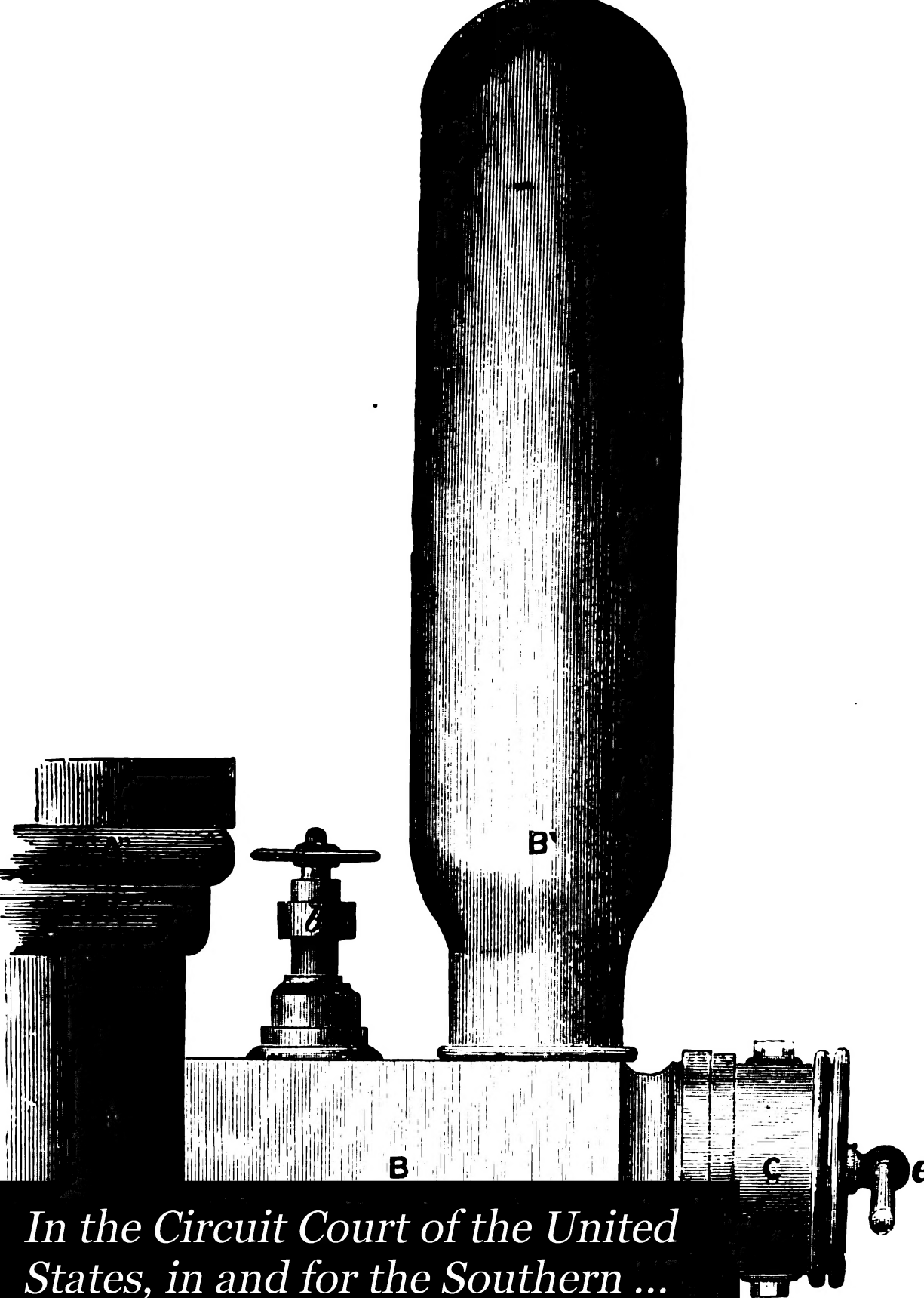
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*In the Circuit Court of the United  
States, in and for the Southern ...*

Christopher C. Campbell





31







In the Circuit Court of the United States of America,

IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.

SECOND CIRCUIT.

IN EQUITY.

---

CHRISTOPHER C. CAMPBELL,  
COMPLAINANT, AND ASSIGNEE IN TRUST,

VERSUS

THE MAYOR, ALDERMEN, AND COMMONALTY OF  
THE CITY OF NEW YORK,  
DEFENDANTS.

---

PLEADINGS AND PROOFS.

---

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*[Faint, illegible handwritten notes]*

# In the Circuit Court of the United States of America,

IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.

SECOND CIRCUIT.

IN EQUITY.

---

CHRISTOPHER C. CAMPBELL,  
*Complainant and Assignee in Trust,*

Title.

*versus*

THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK,  
*Defendants.*

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## Bill of Complaint.

Address. *To the Honorable the Judges of the Circuit  
Court of the United States, in and for the  
Southern District of New York:*

1 **Introductory.** CHRISTOPHER C. CAMPBELL, of East Chatham, in the town of Chatham, county of Columbia, and State of New York, and a citizen of the said State, and also a citizen of the United States of America, brings this his bill into this Honorable Court against the Mayor, Aldermen, and Commonalty of the City of New York, a municipal corporation in the Southern District of New York aforesaid, duly organized under and pursuant to the laws of the State of New York, as hereinafter will more fully and at large appear.

2 **Citizenship of James Knibbs.** And thereupon your Orator complains and says: that heretofore and prior to the twenty-fourth day of May, A.D. 1864, one James Knibbs, who, at that time and for a long time previous

thereto, was the engineer-in-chief of a steam fire-engine in the city of Troy, known in said city as the "Arba Read," and a citizen of the United States aforesaid, had

Invention by James Knibbs. invented certain new and useful improvements in steam fire-engine pumps for the extinguishment of fires, conflagrations, or burning  
 3 buildings, for which invention and improvements letters-patent of the United States of America were duly granted, issued, and delivered, as hereinafter set forth.

Assignment from Knibbs to Norton. That prior to the granting, issuing, and delivery of the letters-patent aforesaid, and prior to the application therefor, the said James Knibbs duly made, executed, and delivered unto himself and one Marcus P. Norton, his certain deed of assignment, and the same was duly recorded in the  
 4 Patent Office of said United States, prior to the granting, issuing, and delivery of the letters-patent aforesaid, and such recording was on the ninth day of May, 1864, in Liber C. 7, p. 485, of Transfers of Patents.

Substance of assignment to Norton. And in and by said deed of assignment, the said James Knibbs did sell, assign, and transfer unto the said Marcus P. Norton, his heirs, assigns, or administrators, the full, entire, and exclusive right to one equal, undivided, half part or moiety of the aforesaid invention and improvements ;  
 5 and did therein and thereby further sell, assign, and transfer unto himself, the said James Knibbs, the other and remaining half part or moiety of the said invention and improvements. And he, the said James Knibbs, did therein and thereby request and authorize the Commissioner of Patents to issue the said letters-patent to the said James Knibbs and the said Marcus P. Norton, as the sole assignees of his whole right and title thereto, for the sole use, benefit, and behoof of the said James Knibbs and the said Marcus P. Norton, and their  
 6 heirs, assigns, or administrators. All of which will more fully and at large appear by the deed of assignment aforesaid and the certificate of record thereof, a true copy whereof is hereto attached and marked "Exhibit A ;" and your Orator hereby prays to make the

same a part of this his Bill of Complaint as fully, effectually, and as completely, as if the same were set out at large in the body thereof.

7 And your Orator further shows: that the  
Specific allegation that Knibbs was original inventor. said James Knibbs was and is the *original*  
 and *first* inventor of the said invention and improvements, described, claimed, and set forth in the letters-patent aforesaid; that the same were not known or used by others before the invention or discovery thereof by said James Knibbs, and were not, at the time of his application for letters-patent upon the same as hereinafter stated, in public use or on sale with his knowledge, consent, or allowance, previous to a term of two years prior to the aforesaid application to the Commissioner of Patents for letters-patent, therefor and  
 8 thereon made in due form of law as herein set forth, other than legitimate experiments by said Knibbs.

Application by Knibbs for letters-patent. That before receiving such letters-patent, the said James Knibbs did make application therefor in writing to the Commissioner of Patents, and made oath that he did verily believe that he was the *original* and *first* inventor of said invention and improvements, for which he solicited letters-patent; and that he did not know or believe that the same were ever before known or used; and  
 9 that he was a citizen of the United States. And the said James Knibbs also filed in the Patent Office a written description of his invention or improvements, and of the manner and the process of making, constructing, and using the same, in such full, clear, and exact terms as to enable any person skilled in the art to which it appertains, or with which it is most nearly connected, to make, construct, and use the same; and did also particularly specify and point out the part, improvements, and the combinations which he claimed  
 10 as his own invention or discovery; and also accompanied the whole with drawings, and with written references thereon, showing and representing his said invention, which said descriptions and drawings were duly signed by the said James Knibbs, and were attested by two witnesses. The said James Knibbs did also

furnish a model of his said invention or improvements; and he did in all other things comply with the statutes of the United States aforesaid, in such case made and provided.

- 11 Payment of fees by Knibbs & Norton. And the said James Knibbs and Marcus P. Norton, having paid into the Treasury of the said United States the sum of *fifteen dollars* upon the filing in said Patent Office of the application in writing aforesaid, and the further sum of *twenty dollars* upon the allowing of said application, and the granting of letters-patent upon said invention and improvements, in all the sum of *thirty-five dollars*,

- Examination by Commissioner of Patents. the fee by law provided; and the Commissioner of Patents having caused an examination to be made of the aforesaid new invention or discovery; and it appearing upon said examination, to the satisfaction of said Commissioner of Patents, that the said James Knibbs and Marcus P. Norton were justly entitled to letters-patent under the law, and that the said invention or discovery being sufficiently useful and important,—the said Commissioner of Patents did, on the 24th of May, A.D. 1864, issue letters-patent of Issue of letters-patent to James Knibbs and Marcus P. Norton. United States of America, signed, sealed,

- 13 and executed in due form of law for the said improvements and invention, and delivered the same to the said James Knibbs and Marcus P. Norton, according to law.

Description of letters-patent. And your Orator further shows: that the aforesaid letters-patent bare date the twenty-fourth day of May, 1864, and, being numbered 42,920, were duly and lawfully issued and delivered in the name of the United States of America, and were and are under the seal of the Patent Office of said United States of America. That the said letters-

- 14 patent were duly signed by the Secretary of the Interior, and countersigned by the Commissioner of Patents as by law required, and the same secured to the said James Knibbs and Marcus P. Norton, their heirs, administrators, or assigns, for the full term Date of letters-patent. of seventeen years from the twenty-fourth day of May, 1864, the full and exclusive right and lib-

erty of making, constructing, using, and vending to others to be used, the said invention and improvements.

- 15 And your Orator further shows: that he has annexed to this, his Bill of Complaint, a true copy of the aforesaid letters-patent, with the schedule therein referred to and making a part of the same, together with the drawings making a part of said schedule, and therein referred to, which said letters-patent, schedule, and drawings, are marked "Exhibit B;" and your Orator prays that the same be taken and considered as a part of this, his Bill of Complaint, as fully, effectually, and completely as if the same were set out at large in the
- 16 body thereof.

And your Orator further shows: that after said letters-patent were granted as aforesaid to the said James Knibbs and Marcus P. Norton, and on or about the twenty-third day of August, 1869, the said

Assignment by Knibbs of one-fourth of his interest to Lemuel H. Tupper, dated August 23, 1867.

- James Knibbs, for a valuable consideration, did, by a certain deed of assignment, grant, assign, sell, and convey unto one Lemuel H. Tupper, his heirs, administrators, or assigns, one quarter or fourth part of all the
- 17 right, title, and interest of him, the said James Knibbs, in, to, and for the invention and letters-patent aforesaid; and thereafter, and on the thirtieth day of September, 1867, the said deed of assignment
- Record of assignment to L. H. Tupper. was duly recorded in the Patent Office at Washington, in the District of Columbia, in Liber W 9, p. 15, of Transfers of Patents. All which will more fully and at large appear by reference to the aforesaid deed of assignment, and certificate of record thereof, true copies whereof are hereto annexed,
- 18 and marked "Exhibit C," and made a part of this bill.

Re-assignment from Tupper to Knibbs.

And your Orator further shows: that thereafter, and on or about the twelfth day of July, A.D. 1877, the said Lemuel H. Tupper, for a valuable consideration, did, by a certain deed of assignment bearing date on the day last aforesaid, grant, sell, assign, and re-convey unto the aforesaid



James Knibbs and his lawful representatives, all his right, title, and interest in and to the aforesaid invention and letters-patent theretofore, by the said James Knibbs, so as aforesaid to him conveyed; and on the twenty fourth day of July, A.D. 1874, the said last-mentioned deed of assignment was duly recorded in the Patent Office at Washington, in the District of Columbia, in Liber I 18, p. 56, of Transfers of Patents. All of which will more fully appear by reference to the last aforesaid deed of assignment, and certificate of record thereof, true copies whereof are hereunto annexed, and marked "Exhibit D," and made a part of this bill.

Record of re-assignment.

And your Orator further shows: that thereafter, and on the nineteenth day of March, 1877, the said Marcus P. Norton did, by a certain deed of assignment in writing, sell, assign, and transfer unto one Helen M. Ingalls, all his right, title, and interest in and to said letters-patent and invention, being one undivided half thereof, which said deed of assignment was duly recorded in the Patent Office at Washington, in the District of Columbia, on the twelfth day of April, 1877, in Liber P 21, p. 181, of Transfers of Patents; all of which will more fully and at large appear by reference to the last aforesaid deed of assignment, and certificate of record thereof, true copies of which are hereunto annexed, and marked "Exhibit E," and made a part of this bill.

Assignment of Ingalls & Knibbs to complainant in trust.

And your Orator further shows: that on the tenth day of October, 1877, the aforesaid Helen M. Ingalls and James Knibbs did, by two certain separate deeds of assignment in writing, sell, assign, and transfer, in trust, unto your Orator, all the right, title, and interest which each of them had in and to the aforesaid named and described invention and letters-patent; they then owning, each, one undivided half part thereof, which said deeds of assignment in trust were, on the nineteenth day of October, A.D. 1877, duly recorded in the Patent Office at Washington, in the District of Columbia, in Liber G 22, pp. 85 and 89 respectively, of Trans-

23 fers of Patents; all which will more and at large appear by said last-mentioned deeds of assignment and the certificates of record thereof thereon indorsed, true copies whereof are hereunto annexed, and marked "Exhibits F" and "G" respectively, and made a part of this your Orator's Bill of Complaint.

Prayer that Exhibits A, B, C, D, E, F, and G, be taken as part of bill, &c.

And your Orator prays: that all and every of the aforesaid mentioned letters-patent, schedules, drawings, and deeds of assignment hereto attached as Exhibits, and marked and herein referred to as "Exhibits A,"  
 24 "B," "C," "D," "E," "F," and "G," respectively, may be deemed and taken as a part of this your Orator's Bill of Complaint; and that the originals or duly authenticated copies thereof, now in the possession of your Orator, and ready at all times here in court to be produced, may be at all times read or referred to, and accepted, received, and regarded, not only as a part of this bill, but as evidence in this cause in behalf of your Orator, Christopher C. Campbell.

25

Resume of complainant's title, and right to sue.

And your Orator further shows: that, by reason of the matters and things hereinbefore stated, and under and by virtue of the said letters-patent and deeds of assignment thereof, the aforesaid James Knibbs and Marcus P. Norton became, and from the date of the letters-patent aforesaid until the twenty-third day of August, 1867, continued to be, jointly entitled to all the rights, interests, and privileges by said letters-patent secured unto them, in and to the improvements, invention, or discovery in said letters-patent particularly set forth, described, and  
 26 claimed; and were jointly entitled to the exclusive right, liberty, and privilege of manufacturing, vending, and using, and licensing others to manufacture, vend, and use, the invention or improvements aforesaid; and were jointly entitled to all benefit, profit, advantage, royalty, and emolument arising from, or in any manner growing out of, the manufacture, sale, or use of said invention or improvements, either under license, or contrary to and in violation of the aforesaid exclusive rights of said James Knibbs and Marcus P. Norton.

27 And from the said twenty-third day of August, 1867, until the said twelfth day of July, A.D. 1874, the said James Knibbs, Marcus P. Norton, and Lemuel H. Tupper were jointly entitled to all the aforesaid exclusive rights, privileges, benefits, profits, advantages, royalties, and emoluments. And on the said twelfth day of July, A.D. 1874, the said James Knibbs and Marcus P. Norton jointly as aforesaid again became, and until the nineteenth day of March, A.D. 1877, continued to be, entitled to all the aforesaid rights, interests, privi-

28 leges, benefits, profits, advantages, royalties, and emoluments, together with all actions and causes of action, whether in law or equity, arising under, growing out of, or based upon said letters-patent, from the date thereof. And on the said nineteenth day of March, A.D. 1877, the said James Knibbs and Helen M. Ingalls jointly became and continued to be entitled to the same until the tenth day of October, 1877. And on the tenth day of October, 1877, your Orator became, and has ever since continued to be, in trust for the

29 uses and purpose in the aforesaid deeds of trust mentioned and set forth, entitled to all the rights, interests, and privileges by said letters-patent originally secured to said James Knibbs and Marcus P. Norton, in and to the aforesaid invention, improvements, or discovery therein particularly set forth, described, and claimed, and to the exclusive right, liberty, and privilege of manufacturing, vending, and using, and licensing others to manufacture, vend, and use, the invention or improvements aforesaid; and to all benefit, profit, advantage,

30 royalty, and emolument arising from, or in any manner growing out of, the manufacture, sale, or use of said invention or improvements, either under license, or contrary to and in violation of the aforesaid *exclusive* rights of the parties hereinbefore named, or your Orator, as trustee as aforesaid, from the date of the aforesaid letters-patent, except such benefit, profit, advantage, royalty, or emolument as had, before the aforesaid assignment to your Orator, been, by the parties aforesaid, actually received or enjoyed. And, on the

31 day last aforesaid, your Orator became, and has ever

since continued to be, entitled, for the uses and purposes in the aforesaid deeds of trust mentioned, to all rights or causes of action, either legal or equitable in their nature, and in his own name as trustee as aforesaid, to bring and maintain all suits, whether in law or in equity, arising under or growing out of, or in any manner based upon, the aforesaid letters-patent, from the date thereof, and during the said term of seventeen years, commencing the twenty-fourth day of May, 32 A.D. 1864, as aforesaid stated.

Charter of city  
of New York,  
May 1, 1857.

- And your Orator further shows unto your Honors: that for many years prior to the first day of May, 1857, and until said date, the inhabitants of that portion of the State of New York known as Manhattan Island, situated in the Southern District of New York aforesaid, were a municipal corporation, existing, known, and organized by the name of "The Mayor, Aldermen, and Commonalty of the City of New York," and on said first day of 33 May, 1857, an Act of the Legislature of the State of New York, duly enacted by said Legislature on the fourteenth day of April, 1857, known and described as chap. 446 of the laws of 1857, and approved by the governor of said State of New York for the time being, went into effect and operation, whereby it was enacted that the corporation aforesaid should continue to be a body politic and corporate in fact and in name, by the same name; to wit, "The Mayor, Aldermen, and Commonalty of the City of New York," and should 34 have perpetual succession, with all the grants, powers, and privileges theretofore had by the said Mayor, Aldermen, and Commonalty; to which said Act and the whole thereof, so far as material for greater particularity and certainty, your Orator prays the leave of this Court to refer. And under and by virtue of the Act aforesaid, the said corporation continued to exist under, and to be known by, the name aforesaid; to wit, "The Mayor, Aldermen, and Commonalty of the City of New York," until the fifth day of April, 1870.
- 35 And your Orator further shows: that by an Act of the Legislature of said State of New York, duly en-

acted by said Legislature on the ninth day of April, 1813, known and described as chap. 86 of the laws of 1813, the said Mayor, Aldermen, and Commonalty of the City of New York, then organized and existing as aforesaid, were authorized, empowered, and required from time to time as often as necessary, to appoint a sufficient number of strong, able, discreet, honest, and sober men, willing to

Appointment of firemen by the mayor, &c. Act of April 9, 1813.

36 accept such appointment, being freeholders or freemen of the said city, to have the care, management, working, and using, of the fire-engines and the other tools and instruments then provided, or thereafter to be provided, for extinguishing fires within the said city, to which said Act and the whole thereof, so far as material for greater particularity and certainty, your Orator begs leave to refer. And under and pursuant to said Act of the Legislature, continuously from time to time thereafter, and until the thirtieth day of March,

37 1865, the aforesaid Mayor, Aldermen, and Commonalty of the City of New York, so as aforesaid incorporated, organized, and existing, did appoint certain freeholders or freemen of said city to have the care, management, working, and using of the fire-engines and the other tools and instruments provided for extinguishing fires in said city, and did furnish to said freeholders or freemen for said purpose, from time to time, and until the said thirtieth day of March, 1865, large numbers of

38 fire-engines and other tools and implements for extinguishing fires; and between the twenty-fourth day of May, 1864, the date of the letters-patent aforesaid, and the thirtieth day of March, A.D. 1865, did attach to

fire-engines already in possession of said firemen, and the same being then the property of said Mayor, Aldermen, and Commonalty of the City of New York, the aforesaid invention and improvement of James Knibbs, and did furnish, between the dates last aforesaid, to said firemen, certain new fire-engines, to which said invention or improvement was attached and combined,

39 all of which will hereinafter more fully and at large appear.

And your Orator further shows: that, on the said

thirtieth day of March, 1865, an Act of the Legislature of the said State of New York, duly enacted by the said Legislature, and approved by the governor of said State of New York for the time being, known as chap. 219 of the laws of 1865, went into effect and operation,

Organization of  
Metropolitan  
Fire-Department.  
Act of  
March 30, 1865.

- whereby it was enacted that four commissioners should  
 40 be appointed, who should form a fire-department, to be known as the "Metropolitan Fire-Department;" and said department was by said Act directed to possess and exercise all the powers, and perform all the duties, theretofore possessed or performed by the fire-department of the city of New York (being the freeholders or freemen aforesaid), or by the officers of said city. And the said Metropolitan Fire-Department were authorized to purchase supplies, tools, implements, and apparatus for extinguishing fires, to be paid for by, to be the prop-  
 41 erty of, and to be used for, the benefit of the aforesaid corporation, the Mayor, Aldermen, and Commonalty of the City of New York. And all the tools, implements, apparatus, and machinery theretofore used by the aforesaid fire-department of the city of New York, being the aforesaid freeholders or freemen, were to be transferred to the said Metropolitan Fire-Department, but to remain the property of the aforesaid Mayor, Aldermen, and Commonalty of the City of New York; to which said Act, and the whole thereof so far as  
 42 material for greater particularity and certainty, your Orator begs leave to refer. And under and pursuant to said last-mentioned Act of the Legislature, the said Metropolitan Fire-Department was duly organized, and all the aforesaid machinery, tools, and implements were to the said department delivered and transferred, including the steam fire-engines, to which were attached and combined for use the aforesaid invention or improvement; and between the said thirtieth day of March, 1865, and the fifth day of April, 1870, the said  
 43 department did, at the expense, for the benefit of, and with the knowledge and consent of, the aforesaid Mayor, Aldermen, and Commonalty of the City of New York, attach to and combine with a large number of fire-en-



gines so transferred to them, the aforesaid invention or improvement, and did purchase a large number of other engines, having affixed thereto and as a part thereof the said invention and improvements, and between the dates last aforesaid did use the same for the benefit of the said Mayor, Aldermen, and Commonalty of the City  
 44 of New York, with their knowledge and consent, and in violation of, and infringement upon, the said letters-patent so dated and numbered, and without license.

And your Orator further shows unto  
 Charter of 1870. your Honors: that, on the aforesaid fifth day of April, 1870, an Act of the Legislature of the State of New York, known as chap. 137 of the laws of 1870, duly enacted by said Legislature, and approved by the governor of said State of New York for the time being, went into effect and operation, whereby the  
 45 aforesaid Act, known as chap. 446 of the laws of 1857, was repealed; and it was enacted that the corporation theretofore (to wit, before said fifth day of April, 1870) existing, and known by the name of "the Mayor, Aldermen, and Commonalty of the City of New York," should continue to be a body politic and corporate, in fact and in name by the same name, and should have perpetual succession, with all the grants, powers, and privileges theretofore held by said Mayor, Aldermen,  
 46 and Commonalty, not modified or repealed by the aforesaid Act, known as chap. 137 of the laws of 1870, to which said Act and the whole thereof, so far as material for greater particularity and certainty, your Orator prays leave to refer at all times.

And your Orator further shows: that, in  
 Fire-department under charter of 1870. and by the Act last aforesaid, the various affairs of said corporation were intrusted to appropriate branches, or parts thereof, in and by said Act known and designated as "Departments," and one of said departments was therein known and designated  
 47 as the "Fire-Department," which said last-mentioned department was, by said Act, empowered to possess, and directed to exercise, all the powers, and to perform all the duties then provided by law for the Metropolitan Fire-Department, and to have power to provide sup-

- plies, horses, tools, implements, and apparatus of any and all kinds, to be used in the extinguishing of fires; and also fire-telegraphs, and to buy, sell, construct, repair, and have the care of the same, and of each and every thereof, and to take any and all such action in the
- 48 premises as might be reasonable and proper, and, upon due organization as a department, to take possession of, for its use, all city property and apparatus and books then or lately in custody of the Metropolitan Fire-Department; and all accounts kept in said fire-department were, by said Act, to be subject to the inspection and revision of another department of said corporation, designated as the "Finance Department," which last-mentioned department was by said Act directed and authorized to settle the same.
- 49 Charter of 1873. And your Orator further shows: that the said corporation continued to exist under, by virtue of, and in accordance with, the last aforesaid Act of the Legislature, until the thirtieth day of April, 1873; and on said thirtieth day of April, 1873, an Act of the said Legislature of the State of New York, known as chap. 335 of the laws of 1873, duly enacted by said Legislature, and approved by the governor of said State of New York for the time being, went into effect and operation, whereby the aforesaid
- 50 Act, known as chap. 137 of the laws of 1870, was repealed; and it was enacted that the corporation theretofore (to wit, before said thirtieth day of April, 1873) existing, and known by the name of "the Mayor, Aldermen, and Commonalty of the City of New York," should continue, and should be a body politic and corporate in fact and in name under the name aforesaid; and should have perpetual succession, with all the grants, powers, and privileges theretofore held by said Mayor, Aldermen, and Commonalty of the
- 51 City of New York, not modified or repealed by the aforesaid Act, known as chap. 335 of the laws of 1873, to which said Act, and the whole thereof, so far as material for greater particularity and certainty, your Orator prays leave at all times to refer. And the said corporation has ever since continued under, and by

virtue of, and in accordance with, the last aforesaid Act of said Legislature; and is the defendant in this cause, mentioned and described in this your Orator's Bill of Complaint.

52                                      And your Orator further shows: that  
    Value of the  
invention and  
letters-patent.      said improvement and invention so as afore-  
                                         said patented are of very great utility and  
    value, and that the same have been and now are exten-  
    sively introduced into public use; and, but for the  
    wrongful acts of the said defendant, the Mayor, Alder-  
    men, and Commonalty of the City of New York, from  
    the said twenty-fourth day of May, 1864, to the pres-  
    ent time, the aforesaid assignors of complainant, and  
 53                                      this complainant as assignee in trust as aforesaid, would  
    have derived many valuable advantages from the sale,  
    license, and use of said improvements and invention to  
    and by the defendant and others; but, by such wrong-  
    ful acts, the said assignors and your Orator have here-  
    tofore been, and your Orator now is, hindered and  
    prevented from making such gains and profits.

   And your Orator further shows: that the said im-  
    provements and invention, with the letters-patent  
    thereon so granted, are, and ever since their use by  
    the defendant have been, of great value to the defend-  
 54                                      ant; to wit, of twenty thousand dollars  
    Wrongs and in-  
fringements by  
defendant.      per year, as your Orator is informed, and  
    verily believes. Yet the said defendant,  
    well knowing the premises and the rights and privi-  
    leges secured so as aforesaid, but continuing to wrong,  
    injure, and damage the aforesaid assignors of your  
    Orator, and also your Orator, and to deprive them and  
    him of the benefits and advantages which might, and  
    otherwise would, accrue unto them and him from the  
    said invention, improvements, and letters-patent, did,  
 55                                      on or about the thirtieth day of May, 1864,  
    From May 25,  
1864, to March  
30, 1865.      and on divers other days and times since  
    then, and continuously therefrom and until  
    the thirtieth day of March, 1865, and during all the  
    time intervening, as your Orator is informed and verily  
    believes, without the license or consent of, and without  
    compensation of any kind to, your Orator's said assign-

ors, or any of them, or of or to your Orator, and in violation of, and infringement upon, the said *exclusive* rights and privileges so secured to your Orator, and in  
 56 violation of, and infringement upon, the said letters-patent so dated and numbered as aforesaid, wrongfully manufacture, and cause to be manufactured, the aforesaid invention and improvements, and did put the same into general use, and cause the same to be put into general use in and by the aforesaid fire-department of the said city of New York, attached to and combined with steam fire-engines owned by said defendant, and used by said department for the purpose of extinguishing fires within the limits of said defendant's corpora-  
 57 tion, and for the benefit, profit, and advantage of said defendant. And well knowing as aforesaid, and contriving as aforesaid, did, on said third day  
From March 30, 1865, to April 5, 1870. of March, 1865, and on divers days and times since then, and continuously therefrom and until the fifth day of April, 1870, and during all the time intervening, as your Orator is informed and verily believes, without the license or consent of, and without compensation of any kind to, your Orator's said assigns or any of them, or of or to your Orator,  
 58 and in violation of, and infringement upon, the said *exclusive* rights and privileges so secured to your Orator, and in violation of, and infringement upon, the said letters-patent, wrongfully manufacture, and cause to be manufactured, the aforesaid invention and improvements, and did put the same into general use, and did cause the same to be put into general use in the aforesaid Metropolitan Fire-Department, attached to and combined with steam fire-engines owned by said defendant, and provided by said defendant for said  
 59 Metropolitan Fire-Department, and used by said department for the purpose of extinguishing fires within the limits of said defendant's corporation, and for the benefit, profit, and advantage of said defendant; and did transfer, and cause to be transferred, to said Metropolitan Fire-Department, the aforesaid fire-engines, with said improvements and invention theretofore by them supplied to said first-mentioned fire-department of the

city of New York, the same to be used for the benefit and profit of said defendant corporation within the limits thereof as aforesaid. And well knowing as aforesaid, and contriving as aforesaid, did, on said fifth day of April, 1870, and divers days and times since then, and continuously until the present time, and during all the time intervening, as your Orator is informed and verily believes, without the license or consent of, and without compensation of any kind to, your Orator's said assignors, or any of them, or of or to your Orator, and in violation of, and infringement upon, the said *exclusive* rights and privileges so as aforesaid secured to your Orator, and in violation of, and infringement upon, the said letters-patent, wrongfully manufacture, and cause to be manufactured, the aforesaid invention and improvements, and did put and continue the same in general use, and caused the same to be put and continued in general use, in the aforesaid part or branch of said corporation, being one of the departments thereof known as the fire-department, attached to the steam fire-engines owned by said defendant, and furnished by them for the use of their said department, for the purpose of extinguishing fires within the limits of said defendant corporation, and for the benefit, profit, and advantage of said defendant; and did transfer, and did cause to be transferred, to them, the said department, the aforesaid fire-engines, with said improvements and invention theretofore by them supplied to the said first-mentioned fire-department of the city of New York, and to said Metropolitan Fire-Department, the same to be used for the benefit and profit of said defendant corporation within the limits thereof as aforesaid.

From April 5,  
1870, to the  
present time.

Construction  
and operation  
of infringing  
device.

And your Orator further shows: that the said defendant, during all the time aforesaid, as aforesaid, did use and did continue to use the aforesaid named and described invention and improvements; and the said invention and improvements, and the steam fire-engines so by them used, and which they are still using, embrace in their

construction and mode of operation the same, or substantially the same, features, as are described in said letters-patent, and secured to your Orator as aforesaid; and the said use was and is an infringement upon the said letters-patent, and was and is in violation of the rights and privileges of your Orator's said assignors and of your Orator.

Damage to complainant, and profits to the defendant.

And your Orator further shows: that the aforesaid acts of infringement of and upon said letters-patent, by the defendant, were to the great injury, damage, and loss, of your Orator's said assignors, and your Orator; and still are to the great injury, damage, and loss of your Orator, by means of which they have been, and your Orator now is, deprived of great gains, advantages, and profits, which they and he might, and otherwise would, have received, made, and obtained; but which have been and are being received and enjoyed by said defendant, by and through their unlawful, unjust, and inequitable acts, as aforesaid mentioned and set forth; all of which profits, gains, and advantages, and all right, title, and interest therein and thereto, have become the property of your Orator, *in trust* as aforesaid; and he is fully authorized and empowered to sue for, collect, or compromise the same. And your Orator prays a

Prayer for discovery, accounting, and damages.

discovery, statement, and accounting of how many, and what steam fire-engines, or other machines embracing in their construction and mode of operation the same or substantially the same features, improvements, and invention, as these described in and claimed by the said letters-patent and secured to your Orator so as aforesaid, the defendant has used as aforesaid, and during what length of time each has been so used; and that the said defendant account for the same to your Orator before one of the Masters of this Honorable Court, and thereupon pay to your Orator all such gains, profits, or emoluments as may or shall have been so received or enjoyed by said defendant, or withheld from your Orator or his assignors, and all the damages your Orator or his assignors have sustained; and that this Honorable Court will assess the same, or



68 cause them to be assessed under its direction, and also increase the same in its discretion, as provided by sect. 4919 of the Revised Statutes of the United States aforesaid.

And forasmuch as your Orator is utterly remediless at the common law, and can have no relief except in this court, in or upon the premises herein stated and set forth:—

Prayer that defendant answer.

To the end, therefore, that the said defendant, the Mayor, Aldermen, and Commonalty of the City of New York, may, if they can, show why your said Orator should not have the relief herein demanded and hereby prayed for, and upon the corporal oath of the mayor of the said city of New York, or other competent officer thereof, according to his best and uttermost knowledge, remembrance, information, and belief, full, true, direct, and perfect answers make to the premises, and to all the several matters hereinbefore stated, set forth, and charged, as fully and as particularly as if interrogated as to each and every  
70 of such matters.

Prayer for injunction.

May it please your Honors to grant unto your Orator, Christopher C. Campbell, assignee in trust as aforesaid, the Writ of Injunction, issuing out of, and under the seal and by the order and by the authority of, this Honorable Court, in due form of law, commending, enjoining, and restraining the said defendant, the Mayor, Aldermen, and Commonalty of the City of New York, their servants, agents, attorneys, and workmen, and their aforesaid  
71 “Fire-Department,” and each and every of them, and all other persons under the command or control of the said defendant, from directly or indirectly making, using, or vending to others to be used, or in any manner counterfeiting or imitating, the said invention or any part or portion thereof, or any thing substantially and materially the same; and that such injunction be made by your Honors perpetual in its character and operation.

And your Orator further prays: that a provisional  
72 or preliminary injunction, upon due notice to the said

defendant, as well as a perpetual injunction at the final hearing of this cause, may be granted and issued, enjoining and restraining the defendant and the said fire-department until said final hearing, in manner and form, and to the extent herein prayed respecting as to said perpetual injunction.

Prayer for provisional injunction.

73 May it also please your Honors to grant to your Orator, Christopher C. Campbell, complainant so as aforesaid, *a writ of subpoena ad respondendum*, issuing out of and under the seal of this Honorable Court, directed to the said defendant, the Mayor, Aldermen, and Commonalty of the City of New York, and commanding the said defendant to be and to appear in this court, and then and there to make answer unto this Bill of Complaint, and to perform and to abide by such order and decree herein as to this court may seem meet.

74 AND YOUR ORATOR AS IN DUTY BOUND WILL EVER PRAY, &C.

*Dated this 19th day of October, 1877.*

CHRISTOPHER C. CAMPBELL,  
*Complainant, and Assignee in Trust.*

LOCKWOOD & POST,  
*Solicitors for Complainant*, No. 140 Nassau Street,  
Room No. 76, Morse Building, New York.

75 MARCUS P. NORTON, *of Counsel for Complainant*,  
Troy, N.Y.

GEORGE H. WILLIAMS, *of Senior Counsel for Complainant*,  
Washington, D.C.

76 BENJAMIN F. BUTLER, *also of Senior Counsel for Complainant*,  
Boston, Mass.

*United States of America, State of New York,*  
*Southern District of New York, Village* } ss.  
*of East Chatham.*

Christopher C. Campbell, the complainant named in the foregoing Bill of Complaint, personally appearing before me, the undersigned, William W. Saxton, a notary public in and for the county of Columbia, and residing at East Chatham, and being by me duly  
 77 sworn, doth depose and say that he has read the foregoing Bill of Complaint, in equity, signed by him, and that he knows the contents thereof, and that the same is true of his own knowledge except as to those matters which are therein stated and alleged to be, on belief or information, derived from others; and, as to those matters, he believes it to be true. And he further says that he verily believes the said James Knibbs, in said bill named, to be *the original* and *the first* inventor of the invention and improvements in  
 78 steam fire-engine pumps, described in the foregoing bill, as well as described, specified, and claimed in the letters-patent granted to said James Knibbs and Marcus P. Norton, dated and numbered as in said bill is stated and set forth, a copy of which is annexed to said Bill of Complaint, and marked, "Exhibit B."

And this deponent also verily believes that the title of the complaint and assignment in trust aforesaid, to the said invention, improvements, and letters-patent, as set forth in said Bill of Complaint, is correct  
 79 and true; and that the said letters-patent contained in said bill are good, sufficient, and valid; and that the said invention and improvements contained in the specifications and claims of such letters-patent are useful, valuable, and of great importance to the public, for the purposes specified therein.

CHRISTOPHER C. CAMPBELL,  
*Complainant, and Assignee in Trust*

80 Subscribed and sworn to before me, this nineteenth day of October, A.D. 1877,

WM. W. SAXTON,

[SEAL.]

*Notary Public in and for County  
of Columbia, N.Y.*

LOCKWOOD & POST,

*Solicitors for Complainant, No. 140 Nassau Street,  
Room No. 76, Morse Building, New York.*

81 MARCUS P. NORTON, of *Counsel for Complainant,*  
Troy, N.Y.

GEORGE H. WILLIAMS, of *Senior Counsel for Com-  
plainant,*

Washington, D.C.

BENJAMIN F. BUTLER, also of *Senior Counsel for Com-  
plainant,*

Boston, Mass.

82

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**Exhibit A, annexed to the Bill of  
Complaint.**

**Whereas**, I, James Knibbs of the city of Troy, county of Rensselaer, State of New York, have invented certain new and useful improvements in pumps for steam fire and other engine pumps, for which I am about to make application for letters-patent of the  
83 United States of America, to which application, including model, drawings, and specifications of the said invention and improvements, reference is hereby had;

**And whereas**, Marcus P. Norton, of the said city, county, and State, has agreed to purchase, and has purchased, of and from me one equal and undivided half, part, or moiety of all my right, title, and interest which I have (which is the *entire* right, title, and interest, and now held by me) in, to, and for the said invention and improvements, in consequence of the grant of any  
84 letters-patent therefor and thereupon, and has paid to me, the said James Knibbs, the sum of one hundred

dollars and other valuable considerations, the receipt of which is hereby acknowledged: Now, therefore, this indenture of assignment WITNESSETH, that for and in consideration of the said sum to me paid, and other valuable considerations which are hereby acknowledged, I have sold, assigned, and transferred, and do hereby sell, assign, and transfer, unto the said Marcus P. Norton, his heirs, assigns, or administrators, the  
 85 full, entire, and exclusive right to all of the said one equal undivided half, part, or moiety of the said invention and improvements made by me, as fully set forth and described in the model, drawings, and specifications which I have prepared, or caused to be prepared and executed, or which may hereafter be so prepared and executed preparatory to the obtaining of letters-patent thereof and thereupon. And I do hereby further sell, assign, and transfer, and have this day sold, assigned, and transferred, unto myself, the said  
 86 James Knibbs, for and in consideration of the sum of one dollar, *the other and remaining* half, part, or moiety of the said invention and improvements as aforesaid described and set forth; and I do hereby request and fully authorize the Hon. Commissioner of Patents to issue the said letters-patent to the said Marcus P. Norton and said James Knibbs, as *the sole* assignees of my whole right and title thereto, for the sole use, benefit, and behoof of the said Marcus P. Norton and the said James Knibbs, and their heirs, assigns, or  
 87 administrators.

Internal revenue stamp, 50 cents.

**In testimony whereof**, I have, on this twenty-seventh day of April, A. D. 1864, hereunto set my hand and seal.

JAMES KNIBBS. [L. S.]

Signed and sealed in presence of

C. E. PATTERSON,

B. MACGREGOR.

88 *Rensselaer County, City of Troy,* } ss.  
*State of New York.*

On this twenty-seventh day of April, A.D. 1864, before me appeared James Knibbs, to me personally known to be the same person described in, and who executed, the foregoing instrument, and acknowledged that he executed the same for the purposes therein named.

Internal rev-  
 enue stamp, 6  
 cents.

89 C. E. PATTERSON,  
*Commissioner of Deeds, Troy, N.Y.*

UNITED-STATES PATENT OFFICE.

Received and recorded May 9, 1864, in Liber C 7,  
 p. 485, of Transfers of Patents. In testi-  
 [L.S.] mony whereof I have caused the seal of the  
 Patent Office to be hereto affixed.

D. P. HOLLOWAY,  
*Commissioner of Patents.*

90

**Exhibit B, annexed to the Bill of  
 Complaint.**

No. 42,920.

THE UNITED STATES OF AMERICA.

*To all to whom these Letters-Patent shall come.*

91 **Whereas**, James Knibbs of Troy, New York, has  
 alleged that he has invented a new and useful improve-  
 ment in pumps (he having assigned his right, title,  
 and interest in said improvement to himself and Mar-  
 cus P. Norton, of same place), which he states has not  
 been known or used before his application, has made  
 oath that he is a citizen of the United States, that he  
 does verily believe that he is the original and first  
 inventor or discoverer of the said improvement, and  
 that the same hath not, to the best of his knowledge  
 92 and belief, been previously known or used; has paid

into the treasury of the United States the sum of thirty-five dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose:

93 These are, therefore, to grant according to law, to the said Knibbs and Norton, their heirs, administrators, or assigns, for the term of seventeen years from the twenty-fourth day of May, one thousand eight hundred and sixty-four, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said James Knibbs, in the schedule hereunto annexed, and is made a part of these presents.

94 **In testimony whereof**, I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand at the city of Washington, this twenty-fourth day of May, in the year of  
[L.S.] our Lord one thousand eight hundred and sixty-four, and of the independence of the United States of America the eighty-third.

J. P. USHER,

95 *Secretary of the Interior.*

Countersigned, and sealed with the }  
seal of the Patent Office. }

D. P. HOLLOWAY,

*Commissioner of Patents.*

THE SCHEDULE REFERRED TO IN THESE LETTERS-  
PATENT, AND MAKING PART OF THE SAME.

No. 42,920.

96 *To all whom it may concern.*

Be it known that I, James Knibbs, of the city of Troy, county of Rensselaer, and State of New York,

have invented new and useful improvements in pumps for steam fire and other engine pumps; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being hereby had to the accompanying drawings and to the letters of reference marked thereon, which said drawings make a part of this specification.

97 Like letters represent and refer to like or corresponding parts.

Fig. 1 is a front view of the pump, and showing my invention and improvements hereinafter described and set forth.

Fig. 2 is a vertical and sectional side view, showing the discharge pipe, or tube, and other parts hereinafter described and set forth.

Fig. 3 is also a vertical and sectional side view, showing the suction or supply pipe, or tube, and other parts  
98 connected therewith, and hereinafter described and set forth.

The nature of my invention and improvements consists in the employment of a pipe or tube, or its equivalent, by means of which the force or discharge part of said pump is connected to and with the suction or supply part of said pump, so that one, two, three, or more discharge pipes, or hose, may throw streams of water at the same time and stroke of the piston or operation of said pump, without any waste of water, by the opening  
99 of a valve or discharge-pipe to enable the pump to work successfully and without injury in the throwing of streams of water at fires, &c. Heretofore in steam fire-engine pumps, constructed for the purpose of throwing *two, three, four*, or more streams of water at one and the same stroke of the piston, there has been a great difficulty attending the practical and successful working of the same whenever it has been desirable to throw but one or two, or perhaps three, streams of water, when the pump is constructed to throw four or  
100 more streams of water; for the suction or supply of water would in that case be greater than the discharge through the hose-pipes, or tubes, as the case may be, in which one of the remaining discharge-pipes, with the



hose-pipe disconnected, or else a waste-water valve, would have to be kept open during the operation of the pumps, so as to make the discharge of water the same in quantity as that received through and by means of the supply or suction part of the pump; for if the discharge be not the same, or nearly so, as that of the  
 101 supply, the pump would become somewhat strained and flooded, and would not, after a while, work or operate. The boiler would also become somewhat flooded, and the engine would cease to work. By the opening of a discharge-pipe or waste-water valve, the discharge would become more equal to that of the supply; but here is a great waste of water, as well as the flooding of the street, where such engine is used, which is not only very inconvenient to those who operate the said engine at fires, &c., but is also to some extent  
 102 injurious to such steam fire-engine.

By my said invention or improvements all these difficulties are fully obviated. The force part or section of the said pump being connected to and with the suction or supply part or section in the manner and by the means substantially as herein described and set forth, no discharge-pipe or water-valve are required to be open during the operation of the engine throwing but one or two streams of water at one operation or stroke of the piston. The extra quantity of water thrown  
 103 into the force or discharge part or section of the pump from the suction or supply part or section, and not discharged through the discharge or hose pipes connected therewith, because the same are closed with one or more exceptions, is conducted, by the means hereinafter described, from the said force part or section of the said pump back into the supply or suction tube, or pipe, connected to and with the said suction or supply part or section of the said pump, and thus the force or discharge part or section of the pump is relieved from any  
 104 excessive quantity of water, and the waste of water and the flooding of the street prevented, while at the same time the engine and the said pump perform all their respective functions in the most perfect and satisfactory manner without hinderance or obstruction, and

the said pump will throw *one, two, three, four*, or more streams of water at the same time, the same being regulated by means of a valve hereinafter described and set forth.

- To enable others skilled in the art to which my said  
 105 invention and improvements relate, to make and use the same, I will here proceed to describe the construction and operation of the same, which is as follows, to wit:  
 (A) is the pump-cylinder, (A') is the lower cylinder head, (A'') is the upper cylinder head, (B) is the suction or supply tube, (C) is a screw-cap, which must be removed when the main hose-pipe leading from the hydrant is to be connected therewith for the purpose of supplying the pump and engine with water. The said supply hose-pipe will be of the required capacity to  
 106 supply water sufficient for all the discharge hose-pipes, be the number thereof more or less. (D) is a tube connecting the force or discharge section of said pump to the vertical valve tube (E). (F) is a discharge-tube, to which the discharge hose-pipe is connected, which is done in the same manner as described in relation to the said suction or supply pipe or hose. (G, G) is a tube or pipe connecting the force or discharge part or section to and with the suction or supply part or section of the said pump, for the purposes herein described and set forth. (H) is the valve to regulate the  
 107 excessive quantity of water to be returned from the force section through the said tube (G, G) to the said suction or supply pipe (B). If all the hose-pipes are discharging water at the same time, this valve will remain closed. If, however, but *one, two, or three* of the hose-pipes are discharging water at the same time or stroke of the piston, then this valve must be open sufficient to allow of the return of the excessive quantity of water which cannot be discharged by  
 108 reason of some one or more of said discharge hose-pipes being closed, because not required in use. (B') is an air-chamber, (e) is the handle by which the water is shut off or from the discharge-pipe (F) in the usual manner and means. (g) is a valve to let water out at (h), if desirable, in the cleaning of the engine.

Having thus described my said invention, what I claim and desire to secure by letters-patent is, —

109 The returning of any excessive water in the force part or section of a steam fire or other engine pump to the suction part or section thereof, substantially as herein described and set forth.

I also claim the connecting of the discharge or force part or section of a steam fire or other engine pump to and with the suction or supply section thereof by means of the tube (G, G) and the regulating valve (H), or any equivalents therefor, substantially as and for the purposes herein described and set forth.

110 In testimony whereof, I have, on this twenty-seventh day of April, A.D. 1864, hereto set my hand.

JAMES KNIBBS.

Witnesses:

C. E. PATTERSON,  
B. MACGREGOR.

JAMES KNIBBS'S  
IMPROVEMENT IN PUMPS  
FOR  
STEAM FIRE AND OTHER ENGINE PUMPS.

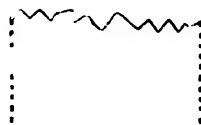


FIG. 1.



FIG. 2.

INVENTOR, JAMES KNIBBS.

WITNESSES:

C. E. PATTERSON,  
B. MacGREGOR.



FIG. 3





**Exhibit C, annexed to the Bill of Complaint.**

**Whereas**, letters-patent of the United States of America were duly granted to James Knibbs and Marcus P. Norton of the city of Troy, county of Rensselaer, and State of New York, for and upon certain new and useful improvements in pumps, which said letters-patent bear date the twenty-fourth day of  
 112 May, A.D. 1864, and to which reference is hereto had for a more full description of the invention herein and hereby assigned;

**And whereas**, the said James Knibbs is now the lawful owner and possessor of one half, part, or moiety of the invention and improvement contained in the letters-patent issued and dated as aforesaid. And whereas, Lemuel H. Tupper, of the said city of Troy, county and State aforesaid, is desirous of purchasing, and has purchased, of and from me, the said Knibbs, one quarter  
 113 or fourth part of all my right, title, and interest in, to, and for the invention aforesaid, or one-eighth ( $\frac{1}{8}$ ) of the entire invention contained in the letters-patent dated and issued as aforesaid.

Internal revenue stamp,  
5 cents.

Now, therefore, this indenture of assignment WITNESSETH, that for and in consideration of the sum of one dollar, and other valuable considerations to me in hand paid, the receipt whereof is hereby acknowledged, I have sold, assigned, and transferred, and do hereby sell, assign, and transfer, unto the said  
 114 Lemuel H. Tupper, his heirs, administrators, or assigns, one quarter or fourth part of all my right, title, and interest, in, to, and for the invention and letters-patent aforesaid, or one-eighth ( $\frac{1}{8}$ ) of the entire letters-patent dated and issued as hereinbefore set forth; the same to be held and enjoyed by the said Lemuel H. Tupper for his own use, benefit, and behoof of his legal representatives to the full end of the term for which said letters-patent are granted, as fully, freely, and entirely as the same would have been held and enjoyed by me had  
 115 this part, assignment, and sale not have been made.

Internal revenue stamp,  
5 cents.

**In testimony whereof**, I have hereunto set my hand and seal this twenty-third day of August, A.D. 1867.

JAMES KNIBBS. [L. S.]

Signed and sealed in presence of

MARCUS P. NORTON,  
CHARLES D. KELLUM.

116

UNITED STATES PATENT OFFICE.

Received for record September 30, 1867, and recorded in Liber W 9, p. 15, of Transfers of Patents.

[L. S.] **In testimony whereof**, I have caused the seal of the Patent Office to be hereunto affixed.

A. M. STOUT,

117

*Acting Commissioner of Patents.*

*City of Troy, County of Rensselaer, State of New York.* } ss.

On this twentieth day of December, A.D. 1873, personally came before me James Knibbs of the city of Troy, and to me personally known, and duly acknowledged that he signed and sealed the above and foregoing deed of assignment for the purposes therein named and set forth, and that he duly delivered the same to Lemuel H. Tupper, the person therein named as his assignor of a certain specified interest and right in the letters-patent on "Steam Fire-Engine Pumps," as and in the manner therein named, and as witnessed on the twenty-third day of August, A.D. 1867, by Marcus P. Norton and Charles D. Kellum. The letters-patent therein named bearing date the twenty-fourth day of May, A.D. 1864, and upon "Steam Fire and other Engine Pumps," and issued to James Knibbs and  
119 Marcus P. Norton of the city of Troy aforesaid.

JAMES LANSING,  
*Commissioner of Deeds, Troy, N.Y.*

**Exhibit D, Annexed to the Bill of  
Complaint.**

**Whereas**, letters-patent of the United States of America were duly granted to James Knibbs and Marcus P. Norton of the city of Troy, county of Rensselaer, and State of New York, for and upon certain new  
120 and useful improvements in steam fire-engine pumps, which said letters-patent bear date the twenty-fourth day of May, A.D. 1864, and to which reference is hereby had for a more full description of the invention herein and hereby assigned ;

**And whereas**, Lemuel H. Tupper is now the lawful owner and possessor of one-eighth part of the invention and improvement in the letters-patent issued and dated as aforesaid ;

**And whereas**, James Knibbs of the city of Troy,  
121 State of New York, is desirous of purchasing, and has purchased, of me, the said Tupper, the one-eighth of said patent held by me, and all my right, title, and interest in and to the same invention aforesaid contained in the letters-patent dated and issued as aforesaid, and numbered 42,920. Now, therefore, this indenture of assignment WITNESSETH, that for and in consideration of the sum of one dollar, and other valuable considerations to me in hand paid, the receipt whereof is hereby acknowledged, I have sold, assigned, and transferred, and I do  
122 hereby sell, assign, and transfer, unto the said James Knibbs, his administrators and assigns, the one-eighth part of the said letters-patent held by me, which I previously purchased of the said Knibbs, the same to be held by the said Knibbs for his own proper use and benefit, or his legal representatives, to the full end of the term for which the said letters-patent are granted, as fully, freely, and entirely as the same would have been held and enjoyed by me.

123       **In testimony whereof**, I have hereunto set my  
hand and seal this twelfth day of July, A.D.  
1874.

LEMUEL H. TUPPER. [SEAL.]

Signed and sealed in the presence of

CHAS. M. SAULSON,  
JAMES R. TORRANCE.

Received for record July 24, 1874, and recorded in  
Liber I 18, p. 56, of Transfers of Patents.

124       **In testimony whereof**, I have caused the seal of  
the Patent Office to be hereunto affixed.

[SEAL.]                      J. M. THATCHER,  
   *Acting Commissioner.*

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### **Exhibit E, annexed to the Bill of Complaint.**

125       **Whereas**, the letters-patent of the United States of  
America were duly granted to James Knibbs and Mar-  
cus P. Norton of the city of Troy, county of Rensse-  
laer, and State of New York, for and upon certain new  
and useful improvements in pumps for steam fire-en-  
gines, which bear date the twenty-fourth day of May,  
A.D. 1864, to which reference is now and hereby had  
for a more full description of the invention herein and  
hereby sold, assigned, and transferred;

126       **And whereas**, the said Marcus P. Norton is now the  
lawful owner and holder of one-half or moiety part of  
the said letters-patent, and of the invention therein  
contained, the same never having been sold, assigned,  
or transferred, prior to the date hereof (the said  
letters-patent are dated as aforesaid, and numbered  
42,920);

127       **And whereas**, Helen M. Ingalls of the said city of  
Troy, county, and State, is desirous of having and ac-  
quiring all the right, title, and interest which I now  
have, or ever had, in, to, or for the said invention, im-  
provements, and letters-patent, and of any and every re-  
issue of the same; also any and every claim I now have,

or ever had, for the past use of the same, or for the sale or manufacture of the said invention and improvements;

Now, therefore, this indenture and assignment and transfer WITNESSETH, that for and in consideration of the sum of one hundred dollars to me, the said Marcus P. Norton, in hand paid, the receipt of which is now and hereby acknowledged, and in the further and other valuable considerations, the receipt of which is  
 128 also hereby duly acknowledged, I have sold, assigned, and transferred, and I do now and hereby sell, assign, and transfer, unto the said Helen M. Ingalls, her heirs, assigns, and lawful representatives, all the right, title, and interest which I now have, or ever had, in, to, or for the said invention, improvements, and letters-patent, and of any and every re-issue thereof; and

I also now and hereby sell, assign, transfer, and convey unto the said Helen M. Ingalls, her heirs, assigns, and lawful representatives, all the right, interest,  
 129 or claim I now have, or ever had, against any and every person, city, corporation, company, or government, for the past and present use of said invention and improvements under the said letters-patent, intending herein and hereby to sell, assign, and transfer unto the said Helen M. Ingalls and her lawful representatives, all my right, title, interest, or claim for the entire past and for the future use of the said invention and letters-patent so dated and numbered; and also the entire invention, improvements, and letters-patent afore-  
 130 said, and every re-issue of the same, as well as full right, liberty, and power to re-issue the said letters-patent whenever it shall be deemed best so to do; each and every of which is to be, and shall be, held and enjoyed by her, the said Helen M. Ingalls, for her own use, benefit, and behoof, and for the use, benefit, and behoof of her legal representatives, to the full end of the term for which the said letters-patent are or were granted and issued, as fully, freely, and entirely as the same would have been held and enjoyed by me, if this  
 131 sale, assignment, and transfer had not been made in the manner so as aforesaid.

Hereby selling, assigning, and conveying unto her,

the said Helen M. Ingalls, her assigns and lawful representatives, all and every right, interest, privilege, title, or claim, whether pending by suit in court or otherwise, which I now have, or ever have had, in any way or manner or from under the said letters-patent, and any and every re-issue of the same, to the full end of the term of seventeen years for which said letters-patent were granted, on and commencing the twenty-fourth day of May, A.D. 1864, with full right, power, and authority to enforce, settle, and adjust the same for any and every manufacture, sale, or use of the said invention, improvements, and letters-patent.

**In testimony whereof**, I have, on this nineteenth day of March, A.D. 1877, hereunto set my hand and seal.

MARCUS P. NORTON. [SEAL.]

183

Signed, sealed, and delivered }  
in presence of

JOHN W. SMITH.

*Town of Canaan, County of Colum- } ss.  
bia, and State of New York.*

On this twentieth day of March, A.D. 1877, personally came before me Marcus P. Norton, to me personally known to be the person named in, and who executed, the foregoing deed of assignment; and he acknowledged to me, in due form of law, that he executed said instrument or deed of assignment, and for the purposes therein named and set forth.

JOHN W. SMITH,  
*Justice of the Peace.*

Received for record April 12, 1877, and recorded  
185 in Liber P 21, p. 181, of Transfers of Patents.

**In testimony whereof**, I have caused the seal  
[SEAL.] of the Patent Office to be hereunto affixed.

W. H. DOOLITTLE,  
*Acting Commissioner.*

**Exhibit F, annexed to the Bill of  
Complaint.**

136 **Whereas**, the letters-patent of the United States  
of America were duly granted and issued to James  
Knibbs and Marcus P. Norton of the city of Troy,  
county of Rensselaer, and State of New York, for  
and upon certain new and useful improvements in  
pumps for steam fire-engines, and other engine-  
pumps, which bear date the twenty-fourth day of  
May, A.D. 1864, and which are numbered 42,920, to  
which reference is now and hereby had for a more full  
description of the invention herein and hereby sold,  
137 assigned, and transferred in the manner hereinafter  
stated ;

**And whereas**, the said Marcus P. Norton did, on  
or about the nineteenth day of March, A.D. 1877, sell,  
assign, and convey unto Helen M. Ingalls of the said  
city of Troy, county, and State, each and every of his  
right, title, and interest in, to, or for the said invention  
and letters-patent so dated and numbered, which deed  
of assignment was duly of record in the Patent Office  
of the United States on the twelfth day of April, A.D.  
138 1877, in Liber P 21, p. 181, of Transfers of Patents,  
to which said deed of assignment, so dated and of  
record, reference is now and hereby had ;

**And whereas**, I, the said Helen M. Ingalls, am now  
the lawful owner and holder of one-half or moiety part  
of the said letters-patent and of the invention therein  
contained, as will more fully and at large appear from  
the said deed of assignment last above mentioned and  
described ;

**And whereas**, Christopher C. Campbell of the town  
139 of Chatham, residing in the village of East Chatham  
in said town, county of Columbia, and State of New  
York, is desirous of having and acquiring all the right,  
title, and interest which I now have, or ever had, in, to,  
or for the said invention, improvements, and letters-  
patent, and of any and every re-issue of the same ; also  
any and every claim or demand I now have, or ever had,



for the past use, manufacture, and sale of the same, and conveyed to me by the said Marcus P. Norton, by the said deed of assignment, dated as aforesaid,—to  
 140 wit, the nineteenth day of March, A.D. 1877,—and recorded in said Patent Office on the twelfth day of April, A.D. 1877, in Liber P. 21, p. 181, as aforesaid.

Now, therefore, this indenture or deed of assignment and transfer WITNESSETH, that for and in consideration of the sum of *one hundred dollars* to me, the said Helen M. Ingalls, in hand paid by the said Christopher C. Campbell, the receipt of which is now and hereby acknowledged, and in the further and other valuable considerations, the receipt of which is also  
 141 now and hereby acknowledged, I have sold, assigned, and transferred, and I do now and hereby sell, assign, and transfer, unto the said Christopher C. Campbell, his heirs, assigns, and lawful representatives, all the right, title, and interest which I now have, or ever had, in, to, or for the said invention, improvements, and letters-patent, and of any and every re-issue thereof; and I also now and hereby sell, assign, and transfer and convey unto the said Christopher C. Campbell, his heirs, assigns, and lawful representatives, all the right,  
 142 title, interest, claim, or demand I now have, or ever had, against any and every person, city, corporation, company, or government, for the past use, manufacture, or sale of the said invention and letters-patent, intending herein and hereby to sell, assign, and convey unto the said Christopher C. Campbell, his lawful representatives, all and every of my right, title, interest, claim, or demand for the entire past, present, and future use, sale, or manufacture of the said invention, improvements, and letters patent, so dated and numbered as  
 143 aforesaid; also the entire invention, improvements, and letters-patent aforesaid, and all and every re-issue of the same, as well as the full right, liberty, and power to re-issue the said letters-patent, as well as to sue for and recover for any and all past infringements upon the said letters-patent, each and every of which is to be, and shall be, held and enjoyed by him, the said Christopher C. Campbell, for his own use, benefit, and

behoof, and for the use, benefit, and behoof of his legal  
 representative to the full end of the term of seventeen  
 144 years for which the said letters-patent were granted  
 and issued as fully, freely, and entirely as the same  
 would have been held and enjoyed by me if this sale,  
 assignment, and transfer had not been made in the  
 manner as herein stated and set forth. Hereby selling,  
 assigning, and conveying unto him, the said Christo-  
 pher C. Campbell, his assigns and lawful representa-  
 tives, all and every right, interest, title, privilege,  
 claim, or demand of every name and nature whatso-  
 ever, whether pending by suit in court or otherwise,  
 145 which I now have, or ever had, in any way, manner, or  
 form, under the said letters-patent, and any and every  
 re-issue of the same, to the full end of the term of  
 seventeen years for which said letters-patent were  
 granted and issued, on and commencing with the  
 twenty-fourth day of May, A.D. 1864, with full right,  
 power, and authority to sue for any and all infringe-  
 ments of said letters-patent, and to enforce, settle, and  
 adjust the same in court or otherwise for any and  
 every manufacture, sale, or use, of the said invention,  
 146 improvements, and letters-patent.

And the said Christopher C. Campbell, as and for  
 the further and additional consideration hereinbefore  
 named or referred to, in and for the sale, purchase,  
 assignment, and transfer so as aforesaid made by  
 me, the said Helen M. Ingalls, of the said invention  
 and letters-patent so dated and numbered, shall pay  
 unto me, the said Helen M. Ingalls, my heirs, assigns,  
 or lawful representatives, one-half or moiety part of any  
 and all sums of money received or had for and on ac-  
 147 count of the said invention and letters-patent from any  
 source whatever, either for the use, manufacture, or  
 sale of the said invention or letters-patent, after de-  
 ducting therefrom one-half of all the actual and neces-  
 sary expenses for settlement and collecting, for the  
 use, sale, manufacture, or for the infringement of the  
 said letters-patent. The said one-half part to be paid  
 out of each and every sale, settlement, or collection  
 made for any use or manufacture of the said invention

and letters-patent, either by or without a suit in court  
 148 for the purposes hereinbefore stated; and any failure  
 to perform according to the terms and conditions  
 herein contained, on the part of the said Christopher  
 C. Campbell, his heirs, or assigns, or legal representa-  
 tives, shall render this deed of assignment and transfer  
 void, and of none effect whatever; and the same shall  
 thereafter be null and void, and of no effect.

**In testimony whereof**, I have, on this tenth day  
 of October, A.D. 1877, hereunto set my hand  
 and seal.

149

HELEN M. INGALLS. [SEAL.]

Signed, sealed, and delivered }  
 in presence of }

MARCUS P. NORTON.

*Town of Canaan, County of Columbia, }*  
*State of New York.*

150 On this twelfth day of October, A.D. 1877, person-  
 ally came before me Helen M. Ingalls, to me per-  
 sonally known to be the person named in, and who  
 executed, the foregoing deed of assignment, and who  
 duly acknowledged to me, in due form of law, that she  
 executed said instrument or deed of assignment, and  
 for the purposes therein named and set forth.

JOHN M. SMITH,  
*Justice of the Peace in and for the*  
*County of Columbia, State of New York.*

151

Received for record October 19, 1877, and recorded  
 in Liber G 22, p. 89, of Transfers of Patents.

**In testimony whereof**, I have caused the seal  
 [SEAL.] of the Patent Office to be hereunto affixed.

W. H. DOOLITTLE,  
*Acting Commissioner.*

152

**Exhibit G.**

**Whereas**, the letters-patent of the United States of America were duly granted to James Knibbs and Marcus P. Norton of the City of Troy, county of Rensselaer, and State of New York, for and upon certain new and useful improvements in pumps for steam fire and other engine pumps, which bear date the twenty-fourth day of May, A.D. 1864, and which are  
 153 numbered 42,920, to which reference is now and hereby had for a more full description of the invention and letters-patent herein and hereby sold, assigned, and transferred;

**And whereas**, the said James Knibbs is now the lawful owner and holder of one-half or moiety part of the said letters-patent, and of the invention therein contained, the said one-half part of all the right, title, and interest in, to, or for the said letters-patent and of said invention being at this time fully and entirely  
 154 vested in the said James Knibbs;

**And whereas**, Christopher C. Campbell of the town of Chatham, residing at the village of East Chatham in said town, county of Columbia, and State of New York, is desirous of having and acquiring all the right, title, and interest aforesaid, which I, the said James Knibbs, now have, or ever had, in, to, or for the said invention, improvement, and letters-patent, and of any and every re-issue of the same; also any and every right and claim or demand which I now have, or ever  
 155 had, to or for the past use of the same, or for the sale, manufacture, or use of the said invention, improvements, or letters-patent.

Now, therefore, this indenture or deed of assignment and transfer WITNESSETH, that for and in consideration of the sum of one hundred dollars to me, the said James Knibbs, in hand this day paid by the said Christopher C. Campbell, the receipt of which is now and hereby acknowledged, and in the further and other valuable consideration, the receipt of which  
 156 is also now and hereby acknowledged, I have, on this

- day, sold, assigned, and transferred, and I do now and hereby sell, assign, and transfer, unto the said Christopher C. Campbell, his heirs, assigns, and lawful representatives, all the right, title, and interest, aforesaid named, which I now have, or ever had, in, to, or for the said invention, improvements, and letters-patent, and also of any and every re-issue thereof; and I also now and hereby sell, assign, and transfer and convey unto the said Christopher C. Campbell, his heirs, assigns, and lawful representatives, all and every of the right, interest, claim, or demand which I now have, or ever had, against any and every person, city, corporation, company, or government, for the past or present use of the said invention and improvements under the said letters-patent, or for any infringement of or upon the said letters-patent dated so as aforesaid,—to wit, the twenty-fourth day of May, 1864,—and numbered 42,920, intending herein and hereby to sell, assign, and convey unto him, the said Christopher C. Campbell, his lawful representatives, all and every of my right, title, interest, claim, or demand for the entire past, present, and future use, manufacture, or sale of the invention and letters-patent so dated and numbered; and also the entire invention, improvement, and letters-patent aforesaid, and each and every re-issue of the said letters-patent, as well as full right, liberty, and power to re-issue the same whenever it shall be deemed best so to do, each and every of which is to be, and shall be, held and enjoyed by him, the said Christopher C. Campbell, for his own use, benefit, and behoof, and for the use, benefit, and behoof of his legal representatives to the full end of the term of seventeen years for which the said letters-patent were granted and issued on the said twenty-fourth day of May, A.D. 1864, as fully, freely, and entirely as the same would have been held and enjoyed by me, if this sale, assignment, and transfer had not been made in the manner so as aforesaid.

Herein and hereby selling, assigning, and conveying unto him, the said Christopher C. Campbell, his assigns and lawful heirs and representatives, all and every

right, title, interest, privilege, claim, or demand of every name or nature, whether pending in court or otherwise, which I now have, or ever had, under the said letters-patent, and any and every re-issue of the same, to the full end of the said term of seventeen years, for which the said letters-patent were granted, on and commencing with the twenty-fourth day of May, A.D. 1864, with the full right, power, and authority to sue for, to enforce, to settle, and adjust the same, as he, the said Christopher C. Campbell, shall deem to be proper and advisable, for any and every manufacture, sale, or use of the said invention, improvements, and letters-patent so dated and numbered.

And the said Christopher C. Campbell, as and for further and additional consideration in the sale, purchase, assignment, and transfer of the said letters-patent and invention so as aforesaid made, shall pay unto the said James Knibbs, or his lawful representatives, the sum of ten thousand dollars out of any sales, settlement, collections, or recoveries, had or made of or for the use, manufacture, or sale of the said invention and letters-patent. The said sum of ten thousand dollars shall be paid to the said James Knibbs by the said Christopher C. Campbell out of the money had or received from such settlements, collections, or recoveries hereinbefore stated, at the rate of ten per cent upon all such settlements, collections, or recoveries for infringements upon the said letters-patent, until the said sum of ten thousand dollars is paid; and after that no other or further payments are to be made by said Campbell to said Knibbs.

**In testimony whereof**, I have, on this tenth day of October, A.D. 1877, hereunto set my hand and seal.

JAMES KNIBBS. [SEAL.]

Signed, sealed, and delivered }  
164 in presence of }

MARCUS P. NORTON.

*City of Troy, County of Rensselaer,* } ss.  
*State of New York.*

On this eleventh day of October, A.D. 1877, personally came before me James Knibbs, to me personally known to be the person named in, and who executed, the foregoing deed of assignment and transfer, and acknowledged to me, in due form of law, that he  
 165 executed said instrument or deed of assignment, and for the purposes therein named and set forth.

ISAAC W. CRISSEY,  
*Notary Public, Rensselaer Co., N.Y.*

*State of New York, City of Troy,* } ss.  
*Rensselaer County, Clerk's*  
 166 *Office.*

I, Eben C. Reynolds, clerk of said county, and also clerk of the Supreme and County Courts, being courts of record held therein, do certify that Isaac W. Crissey, whose name is subscribed to the certificate of proof of acknowledgment of the annexed instrument, was, at the time of taking such proof or acknowledgment, a notary public of the county of Rensselaer, dwelling in said county, and duly authorized to take the same;  
 167 that I am well acquainted with the handwriting of the said notary public, and verily believe that his signature to the said certificate of proof of acknowledgment is genuine, and that said instrument is executed and acknowledged according to the laws of the State of New York.

**In testimony whereof,** I have hereunto set  
 [SEAL.] my hand, and affixed the seal of said  
 168 county, this eleventh day of October,  
 A.D. 1877.

E. C. REYNOLDS, *Clerk.*

Received for record October 19, 1877, and recorded  
in Liber G 22, p. 85, of Transfers of Patents.

**In testimony whereof,** I have caused the  
[SEAL.] seal of the Patent Office to be hereunto  
affixed.

W. H. DOOLITTLE,  
*Acting Commissioner.*

169

### **Writ of Subpœna ad Respondendum.**

THE PRESIDENT OF THE UNITED STATES OF AMERICA, to the Mayor, Aldermen, and Commonalty of the City of New York, Greeting.

You are hereby commanded that you and each of  
170 you personally appear before the Judges of the Circuit  
Court of the United States of America, for the Southern  
District of New York, in the Second Circuit Court,  
in Equity, on the first Monday of December, A.D.  
1877, wherever the said court shall then be, to answer  
a Bill of Complaint exhibited against you in the  
said court by Christopher C. Campbell, and to do  
further and receive what the said Court shall have  
considered in that behalf. And this you are not to  
omit under the penalty on you, and each of you, of  
171 two hundred and fifty dollars.

Witness, Hon. Morrison R. Waite, chief justice of  
the Supreme Court of the United States, at the city  
of New York, on the thirteenth day of November, in the  
year one thousand eight hundred and seventy-seven,  
and of the Independence of the United States of  
America the one hundred and second.

JOHN I. DAVENPORT, *Clerk.*

LOCKWOOD & POST,

*Complainant's Solicitors, New York.*

172

The defendants are required to enter appearance in  
the above cause in the clerk's office of this court, on  
or before the first Monday of December, 1877, or the  
bill will be taken *pro confesso* against them.

J. I. D., *Clerk.*



*Southern District of New York, ss.*

William T. Smith, being duly sworn, deposes and says, that, on the thirteenth day of November, inst., he served on William C. Whitney, Esq. (Corporation  
173 Counsel of the city of New York), personally, at his residence, 94 Park Avenue, New-York City, a copy of the within subpoena, at the same time showing him the within original.

WILLIAM T. SMITH.

Sworn to before me this four- }  
teenth day of November, 1877. }

JOHN A. SHIELDS, *U. S. Commissioner.*

174 I hereby certify that the within subpoena was served, as appears by the affidavit of William T. Smith, indorsed thereon.

LOUIS F. PAYN, *U. S. Marshal.*

December 26, 1877.

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[INDORSED.]

United States Circuit Court. — Filed December 27,  
175 1877. — John I. Davenport, Clerk.

December 26, 1877. — I hereby depute W. T. Smith to serve the within writ. — Louis F. Payn, U.S. Marshal.

New York, November 13, 1877.

**In the Circuit Court of the United States,**

IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.

SECOND CIRCUIT.

IN EQUITY.

CHRISTOPHER C. CAMPBELL,  
*Complainant, and Assignee in Trust,*

*versus*

THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK,  
*Defendants.*

RETAINER AND APPEARANCE.

176 SIR,— You will please take notice that the Mayor,  
Aldermen, and Commonalty of the City of New York,  
hereby appear in this suit by me as their solicitor, and  
you will please enter my appearance accordingly.

Dated third day of December, 1877.

Yours, &c.,

WM. C. WHITNEY,

177 *Counsel to the Corporation of the Mayor, &c., of the*  
*City of New York,*  
*Solicitor for Defendants.*

To JOHN I. DAVENPORT, Esq.,

*Clerk of the United States Circuit Court in S. D*  
*N. Y., Second Circuit.*

[INDORSED.]

178 United States Circuit Court, in Equity — Christopher C. Campbell, Plaintiff, *against* The Mayor, Aldermen, and Commonalty of the City of New York, Defendants. — Wm. C. Whitney, Counsel to the Corporation, No. 2 Tryon Row, N.Y.

United States Circuit Court. — Filed December 3, 1877. — John I. Davenport, Clerk.

To JOHN I. DAVENPORT, Esq.,

*Clerk United States Circuit Court.*

**In the Circuit Court of the United States,**

IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.

SECOND CIRCUIT.

IN EQUITY.

CHRISTOPHER C. CAMPBELL,

*Complainant, and Assignee in Trust,*

*versus*

THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK,

*Defendants.*

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**Defendant's Answer.**

*The Answer of the Mayor, Aldermen, and Commonalty  
of the City of New York, Respondent, to the Bill of  
Complaint exhibited against it by the above-named  
Complainant.*

179 The respondent, now and at all times hereafter, saving and reserving to itself all and all manner of benefit of exception which may be had or taken to the manifold errors, uncertainties, imperfections, and insufficiencies of the said Bill of Complaint, for answer thereto, or to so much as it is advised it is material or necessary to make answer to, answering, says:—

180 That, upon information and belief alone, it admits that letters-patent of the United States were issued to persons of the names alleged in this Bill, and at the date therein referred to, for an alleged invention therein referred to; but whether any of the provisions or requirements of law were duly or at all complied with, it has no knowledge or information, and cannot set

forth, and leaves the complainant to make such proof thereof as he may be advised. Said respondent denies that the alleged copy of said letters-patent, purporting to be annexed to the Bill, is a true or correct copy.

The respondent, further answering, says, that it is not advised, save by the Bill of Complaint, whether  
 181 said letters-patent were assigned to said complainant, by or through any of the alleged assignments as set forth in said Bill, or otherwise, or whether said alleged assignments are duly or at all recorded in the Patent Office; and leaves the complainant to make such proof thereof as he may be advised.

And the respondent, further answering, denies that it has ever at all, in any way, infringed upon the aforesaid letters-patent, or that it is now infringing upon the same, or intends so to do, either by making, using,  
 182 or vending to others to be used, or otherwise, the said invention, as alleged in the Bill of Complaint, or otherwise, or that it has made any profit therefrom, or caused any damage to the complainant thereby, or that any of the alleged acts of the alleged Metropolitan Fire-Department were done or performed for the benefit of this respondent, or with its knowledge, consent, procurement, or expense.

And the respondent, further answering, says, that, as to the allegations of the Bill setting forth the various  
 183 charters, laws, and alleged acts and doings relating to the incorporation of this respondent, or to the organization, incorporation, or duties of alleged departments, particularly of the alleged Metropolitan Fire-Department, the respondent denies that the same are fully or correctly stated; and it refers to the original laws and records for greater certainty, and leaves the complainant to make such proof thereof as he may be advised.

And this respondent, further answering, denies that it is, or ever was, in any manner responsible for any  
 184 alleged acts or doings of the alleged Metropolitan Fire-Department, or other fire-departments.

And the respondent, further answering, says, that it is advised, and therefore avers, that said letters-patent, and each and every part thereof, are void, and of

no effect in law, because that the specification accompanying the same is not in such full, clear, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practise the alleged invention, and because  
 185 the said patentees did not therein give to the public the best and utmost of their knowledge as to the making and using said invention.

And the respondent, further answering, says, that it is informed and believes that the said letters-patent, and each and every part thereof, are void, and of no effect in law, because that the said alleged invention had been, prior to said alleged invention or discovery thereof, patented by the following named persons, in and by the following named patents :—

186 FRENCH PATENTS :

Of Provin, dated January 18, 1850, No. 5,219.  
 Of Letester, dated December 30, 1850, No. 6,324.  
 Of Frimot, dated April 21, 1835, vol. 36, p. 399  
 (1st series) ; plate 38, Fig. 2.  
 Of Lobry, dated October 30, 1854, No. 11,885.  
 Of Belleville, dated June 18, 1856, No. 16,941.  
 Of Benoit Duportail, dated June 12, 1857, No. 19,532.

ENGLISH PATENTS :

187 Of Bramah, No. 1,948, dated May 17, 1793.  
 Of W. Roberts, No. 2,430, dated September 2, 1862.  
 W. Wylam, No. 10,612, dated October 15, 1845.  
 Of F. O. Ward, No. 2,638, dated October 22, 1861.

AMERICAN PATENTS :

Of Mason & Baldwin, dated December 2, 1829,  
 No. 414.  
 Of G. Lindsay, dated March 10, 1857, No. 16,801.  
 Of A. C. Twining, dated December 24, 1861, No. 34,018.  
 188 Of R. A. Wilder, dated March 27, 1860, No. 27,662.  
 Of Reuel Blackwood, dated June 25, 1861, No. 31,612.  
 Of Waters & Harnett, dated July 20, 1858, No. 20,967.

And the respondent, further answering, says, that the said letters-patent, and each and every part thereof, are void, and of no effect in law, because that the said alleged invention had been described in some printed publication prior to the supposed invention or  
 189 discovery thereof by the complainants; to wit, "The Engineers' Encyclopædia," published in London in 1849, vol. ii., p. 686; "Encyclopædia Britannica," eighth edition, 1856, vol. xii., p. 178; a print published by the Amoskeag Manufacturing Company at Manchester, N.H., in or about the year 1860. And the respondent, further answering, says, that in view of the state of the art, and the inventions preceding said alleged invention of said Knibbs, that no invention was required or exercised in making the device described and  
 190 claimed in the letters-patent set forth in the bill.

And the respondent, further answering, says, that the said letters-patent, and each and every part thereof, are void, and of no effect in law, because that the said alleged inventor was not the original and first inventor or discoverer of any material or substantial part of the said alleged invention or discovery; but that the same, and every material and substantial part thereof, had been previously invented and used by and known to the following persons, at the places set opposite their names respectively, such persons now residing, to the best of the respondent's knowledge and belief, at the places respectively specified, viz.:—

By Nehemiah S. Bean (and by numerous other employees and officers of the Amoskeag Manufacturing Company) of Manchester, N.H., and at said place; and at Lowell and Boston, Mass., and elsewhere; by E. A. Straw, of and at the same places; by Thomas H. Peto, of and at Philadelphia, Penn.

And the respondent, further answering, says, that  
 192 the said letters-patent, and each and every part thereof, are void, and of no effect in law, because that the said alleged invention, with the knowledge, acquiescence, and consent of said inventor and patentees, had been in public use and on sale in this country for more than two years before the said alleged inventor's

or patentees' application for their patent therefor, and that the same had been abandoned to the public by the said inventor and patentees.

193 And the respondent denies that said letters-patent, or the alleged rights of the complainant, have been ever at all acknowledged or acquiesced in; but, on the contrary, alleges that the said alleged invention has been publicly used in defiance and disregard of any alleged rights of the complainant.

194 And the respondent denies all and all manner of unlawful combination by the said bill charged; without this, that there is any other matter, cause, or thing in the said Bill of Complaint contained (material or necessary to make answer unto, and not herein, and hereby well and sufficiently answered, confessed, traversed, and avoided or denied), true to the knowledge or belief of the respondent, all which matters and things the respondent is ready and willing to aver, maintain, and prove, as this Honorable Court shall direct, and humbly prays to be hence dismissed, with its reasonable costs and charges in this behalf most wrongfully sustained.

WM. C. WHITNEY, *Counsel to the Corporation,*  
*Respondent's Solicitor.*

195 BETTS, ATTERBURY, & BETTS,  
FREDERIC H. BETTS,  
*Of Counsel.*

UNITED STATES OF AMERICA,  
SOUTHERN DISTRICT OF NEW YORK, } ss.  
*City and County of New York.*

196 On this fifth day of February, 1878, before me came John Kelly, comptroller of the city of New York, the above-named respondent, and, being by me duly sworn, did depose and say that he had read the foregoing answer, and that the same is true of his own knowledge, except as to those matters therein stated to be on information and belief, and as to those matters he believes it to be true.

JOHN KELLY, *Comptroller.*  
CHARLES W. LAWRENCE, *Notary Public.*  
City and County of New York.



[INDORSED.]

197 Circuit Court of the United States, Southern District  
of New York. — Christopher C. Campbell, Assignee in Trust, *vs.* the Mayor, Aldermen, and Commonalty of the City of New York. — Answer. Wm. C. Whitney, Counsel to the Corporation, Respondent's Solicitor, 2 Tryon Row, New-York City. Frederic H. Betts, of Counsel, 20 Nassau Street.

U. S. Circuit Court. — Filed February 6, 1878. — John I. Davenport, Clerk.

# In the Circuit Court of the United States,

IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.

SECOND CIRCUIT.

IN EQUITY.

CHRISTOPHER C. CAMPBELL,

*Complainant, and Assignee in Trust,*

*versus*

THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK,

*Defendants.*

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## Complainant's Replication.

*The Replication of the above-named Complainant to the  
Answer of the Mayor, Aldermen, and Commonalty of  
the City of New York.*

- 198 This repliant, saving and reserving to himself now  
and at all times hereafter, all and all manner of benefit  
and advantage of exception which may be had or  
taken to the manifold insufficiencies of the said answer,  
for replication thereunto, says that he will aver, main-  
tain, and prove his Bill of Complaint to be true, cer-  
tain, and sufficient in the law to be answered unto;  
and the said answer of said defendant is uncertain,  
untrue, and insufficient to be replied unto by repliant  
without this, that any other matter or thing whatso-  
199 ever in the said answer contained, material or effectual  
in the law to be replied unto, confessed and avoided,  
traversed or denied, is true, all which matters and  
things this repliant is and will be ready to aver, main-  
tain, and prove, as this Honorable Court shall direct,

and humbly prays, as in and by his said Bill he has already prayed.

200 LOCKWOOD & POST, *Solicitors for Complainant*,  
140 Nassau Street, Room No. 76, Morse Building,  
New York.

MARCUS P. NORTON, *of Counsel for Complainant*,  
Troy, N.Y.

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[INDORSED.]

201 U. S. Circuit Court, Southern District of New York.  
In Equity.—Christopher C. Campbell, Assignee  
in Trust, *vs.* The Mayor, Aldermen, and Com-  
monalty of the City of New York.—Replication.  
—Lockwood & Post, Complainant's Solicitors, 59  
Liberty Street.

U. S. Circuit Court.—Filed February 7, 1878.—John  
I. Davenport, Clerk.

# In the Circuit Court of the United States,

IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.

SECOND CIRCUIT.

IN EQUITY.

CHRISTOPHER C. CAMPBELL,  
*Complainant, and Assignee in Trust,*

*versus*

THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK,  
*Defendants.*

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## Stipulation.

202 It is hereby stipulated that the time to take testimony herein be, and the same is hereby, extended three months beyond the time limited by the sixty-ninth equity rule; to wit, until three months after May 7, 1878.

Dated April 23, 1878.

LOCKWOOD & POST, *Complainant's Solicitors.*

WM. C. WHITNEY, *Defendant's Solicitor.*

FREDERIC H. BETTS, *Counsel.*

203

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[INDORSED.]

U. S. Circuit Court. — Campbell *vs.* The Mayor, &c., of the City of New York. — Stipulation. — Lockwood & Post, Complainant's Solicitors, 59 Liberty.

U. S. Circuit Court. — Filed June 18, 1878. — John I. Davenport, Clerk.

**In the Circuit Court of the United States,**

IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.

SECOND CIRCUIT.

IN EQUITY.

CHRISTOPHER C. CAMPBELL,

*Complainant, and Assignee in Trust,*

*versus*

THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK,

*Defendants.*

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**Stipulation.**

204 The time to take testimony herein is hereby extended one month from date; to wit, until the fifth day of September, 1878.

Dated August 7, 1878.

LOCKWOOD & POST, *Solicitors for Complainant.*

BETTS, ATTERBURY, & BETTS, *Solicitors for Respondent.*

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205

[INDORSED.]

U. S. Circuit Court. — In Equity. — C. C. Campbell  
*vs.* the Mayor, Aldermen, and Commonalty of the  
City of New York. — Stipulation.

U. S. Circuit Court. — Filed January 18, 1878. — John  
I. Davenport, Clerk.

**In the Circuit Court of the United States,**

IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.

SECOND CIRCUIT.

IN EQUITY.

CHRISTOPHER C. CAMPBELL,

*Complainant, and Assignee in Trust,*

*versus*

THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK,

*Defendants.*

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**Stipulation.**

206 The time to take testimony herein is hereby extended until the seventh day of October, 1878.

LOCKWOOD & POST, *Solicitors for Complainant.*

FREDERICK H. BETTS, *Counsel for Defendants.*

August 29, 1878.

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[INDORSED.]

207 U. S. Circuit Court. — Campbell *vs.* the Mayor, &c., of the City of New York. — Stipulation. — Lockwood & Post, Solicitors for Complainant.

U. S. Circuit Court. — Filed September 21, 1878.  
John I. Davenport, Clerk.

**In the Circuit Court of the United States,**

IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.

SECOND CIRCUIT.

IN EQUITY.

CHRISTOPHER C. CAMPBELL,

*Complainant, and Assignee in Trust,*

*versus*

THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK,

*Defendants.*

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**Stipulation.**

208 It is hereby stipulated and agreed that proof of the various Acts of the Legislature of the State of New York, pleaded in the Bill herein, in folios 32 to 63 of the printed copy thereof, may be made by the oral testimony of a witness, who shall read from an authorized edition of the Session Laws of the State of New York, with the same force and effect as if proved by certified copies of said Acts. And upon such proof being made, the production of certified copies is waived.

F. H. BETTS, *Counsel.*

209 LOCKWOOD & POST, *Solicitors for Complainant.*

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[INDORSED.]

U. S. Circuit Court. — Christopher C. Campbell *against* the Mayor, &c., of the City of New York. — Stipulation.

U. S. Circuit Court. — Filed September 21, 1878. — John I. Davenport, Clerk.

COMPLAINANT'S EXHIBITS PRODUCED AND  
FILED IN THE TAKING OF THE PROOF.

**Complainant's Exhibit, A.**

SEPTEMBER 25, 1878. J. A. S., EX'R.

DEPARTMENT OF THE INTERIOR.—UNITED  
STATES PATENT OFFICE.

*To all persons to whom these presents shall come,  
Greeting.*

- 210 This is to certify that the annexed is a true copy, from the files of this office, *of the file wrapper and contents*, in the matter of the letters-patent granted James Knibbs, assignor to self and Marcus P. Norton, dated May 24, 1864, No. 42,920, for "Improvement in Pumps."

- 211 [SEAL.] **In testimony whereof**, I, W. H. Doolittle, Acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this twenty-first day of September, in the year of our Lord on, thousand eight hundred and seventy-eight and of the independence of the United States the one hundred and third.

W. H. DOOLITTLE,  
*Acting Commissioner.*

*To the Honorable Commissioner of Patents.*

- 212 The petition of James Knibbs of the city of Troy, in the county of Rensselaer, and State of New York, —  
Respectfully represents that your petitioner has invented new and useful improvements in pumps for steam fire and other engine pumps, which he verily believes has not been known or used prior to the invention thereof by your petitioner. He therefore



prays that letters-patent of the United States may be granted him therefor, vesting in him and his legal representatives the exclusive right to the same, upon  
 213 the terms and conditions expressed in the Act of Congress, and all amendments thereof, in that case made and provided; he having paid \$15 (fifteen dollars) into the treasury of the United States, and complied with the other provisions of the said Act, and the several amendments thereof.

And your petitioner does hereby constitute and appoint Marcus P. Norton of Troy, county of Rensselaer, State of New York, his attorney, and fully authorize and empower him to alter or modify the within  
 214 specification and claim as he may deem proper, expedient, and in conformity to law, and the decision or decisions of the Honorable Commissioner of Patents, hereby recognizing and confirming all that his said attorney may lawfully do or perform in relation thereto; and also to receive his letters-patent when granted.

1 Dollar  
 James Knibbs  
 By M. P. Norton  
 May 13, 1864.

JAMES KNIBBS.

Witness:

215 C. E. PATTERSON.

*City of Troy, County of Rensselaer, } ss.  
 State of New York.*

On the twenty-seventh day of April, A.D. 1864, before me, the subscriber, a commissioner of deeds, personally appeared the within named James Knibbs, and, being sworn according to law, says, that he verily  
 216 believes himself to be the original and first inventor of the within described new and useful improvements in pumps for steam fire and other engine pumps; that he does not know or believe the same was ever beforeknown or used; that he is a citizen of the United States, and loyal thereto.

5 5  
 C. E. P.  
 April 27,  
 1864.  
 5 5

JAMES KNIBBS.

Subscribed and sworn to before me, on the day,  
month, and year first above written.

217 C. E. PATTERSON, *Commissioner of Deeds*,  
Troy, N.Y.

*To all whom it may concern.*

Be it known that I, James Knibbs of the city of  
Troy, county of Rensselaer, and State of New York,  
have invented new and useful improvements in pumps,  
for steam fire and other engine pumps; and I do  
hereby declare that the following is a full, clean, and  
218 exact description thereof, reference being hereby had  
to the accompanying drawings, and to the letters of  
reference marked thereon, which said drawings make a  
part of this specification.

Like letters represent and refer to like or corre-  
sponding parts.

*Fig. 1* is a front view of the pump, and showing my  
invention and improvements hereinafter described and  
set forth.

*Fig. 2* is a vertical and sectional side view, showing  
219 the discharge pipe, or tube, and other parts hereinafter  
described and set forth.

*Fig. 3* is also a vertical and sectional side view,  
showing the suction or supply pipe, or tube, and other  
parts connected therewith, and hereinafter described  
and set forth.

The nature of my invention and improvements con-  
sists in the employment of a pipe, or tube, or its  
equivalent, by means of which the force or discharge  
part of said pump is connected to and with the suc-  
220 tion or supply part of said pump, so that one, two,  
three, or more discharge pipes, or hose, may throw  
streams of water at the same time and stroke of the  
piston or operation of said pump, without any waste of  
water, by the opening of a valve, or discharge-pipe, to  
enable the pump to work successfully and without  
injury in the throwing of streams of water at fires, &c.

Heretofore in steam fire-engine pumps constructed  
for the purpose of throwing *two, three, four, or more*

streams of water at one and the same stroke of the  
 221 piston, there has been a great difficulty attending the  
 practical and successful working of the same when-  
 ever, it has been desirable to throw but one or two,  
 or perhaps three, streams of water, when the pump is  
 constructed to throw four or more streams of water ;  
 for the suction or supply of water would in that case  
 be greater than the discharge through the hose-pipes,  
 or tubes, as the case may be, in which one of the re-  
 maining discharge-pipes, with the hose-pipe discon-  
 nected, or else a waste-water valve, would have to be  
 222 kept open during the operation of the pump, so as  
 to make the discharge of water the same in quantity  
 as that received through and by means of the supply  
 or suction part of the pump ; for if the discharge be  
 not the same, or nearly so, as that of the supply, the  
 pump would become somewhat strained and flooded,  
 and would not, after a while, work or operate. The  
 boiler would also become somewhat flooded, and the  
 engine would cease to work. By the opening of a dis-  
 charge-pipe, or waste-water valve, the discharge would  
 223 become more equal to that of the supply ; but here is  
 a great waste of water, as well as the flooding of the  
 street, when such engine is used, which is not only very  
 inconvenient to those who operate the said engine at  
 fires, &c., but is also to some extent injurious to such  
 steam fire-engine.

By my said invention or improvements all these  
 difficulties are fully obviated. The force part or sec-  
 tion of the said pump, being connected to and with the  
 suction or supply part or section in the manner and by  
 224 the means substantially as herein described and set  
 forth, no discharge-pipe or water-valve is required to  
 be open during the operation of the engine, throwing  
 but one or two streams of water at one operation or  
 stroke of the piston. The extra quantity of water  
 thrown into the force or discharge part or section of  
 the pump from the suction or supply part or section,  
 and not discharged through the discharge or hose pipes  
 connected therewith, because the same are closed, with  
 one or more exceptions, is conducted, by the means

225 hereinafter described, from the said force part or section of the said pump back into the supply or suction tube or pipe connected to and with the said suction or supply part, or section, of the said pump; and thus the force or discharge part or section of the pump is relieved from any excessive quantity of water, and the waste of water and the flooding of the street prevented, while at the same time the engine and the said pump perform all their respective functions in the most perfect and satisfactory manner, without hinderance or  
 226 obstruction, and the said pump will throw *one, two, three, four*, or more streams of water at the same time, the same being regulated by means of a valve hereinafter described and set forth.

To enable others skilled in the art to which my said invention and improvements relate, to make and use the same, I will here proceed to describe the construction and operation of the same, which is as follows; to wit, (A) is the pump cylinder, (A') is the lower cylinder head, (A'') is the upper cylinder head, (B) is the  
 227 suction, or supply tube, (C) is a screw-cap, which must be removed when the main hose-pipe leading from the hydrant is to be connected therewith for the purpose of supplying the pump and engine with water. The said supply hose-pipe will be of the required capacity to supply water sufficient for all the discharge hose-pipes, be the number thereof more or less. (D) is a tube connecting the force or discharge section of said pump to the vertical valve tube (E). (F) is a discharge tube, to which the discharge hose-pipe is connected, which is done in the same manner as described  
 228 in relation to the said suction or supply-pipe or hose. (G,G) is a tube or pipe connecting the force or discharge part or section to and with the suction or supply part or section of the said pump for the purposes herein described and set forth. (H) is the valve to regulate the excessive quantity of water to be returned from the force section through the said tube (G,G) to the said suction or supply pipe (B). If all the hose-pipes are discharging water at the same time, this  
 229 valve will remain closed. If, however, but *one, two*,

or *three* of the hose-pipes are discharging water at the same time or stroke of the piston, then this valve must be open sufficient to allow of the return of the excessive quantity of water, which cannot be discharged by reason of some one or more of said discharge hose-pipes being closed because not required in use. (B') is an air-chamber; (e) is the handle by which the water is shut off or from the discharge-pipe (F) in the usual manner and means; (g) is a valve to  
 230 let water out at (h), if desirable, in the cleaning of the engine.

Having thus described my said invention, what I claim and desire to secure by letters-patent, is, —

The returning of any excessive water in the force part or section of a steam fire or other engine pump to the suction part or section thereof, substantially as herein described and set forth.

I also claim the connecting of the discharge or force part or section of a steam fire or other engine pump to  
 231 and with the suction or supply section thereof, by means of the tube (G, G) and the regulating valve (H), or any equivalent therefor, substantially as and for the purposes herein described and set forth.

**In testimony whereof**, I have, on this twenty-seventh day of April, A.D. 1864, hereto set my hand.

JAMES KNIBBS.

Witnesses:

232 C. E. PATTERSON.  
 B. MACGREGOR.

# MEMORANDUM OF FEE PAID AT UNITED STATES PATENT OFFICE.

Inventor, James Knibbs.

Invention, improvement in steam fire engine and other pumps.

Date of payment, May 16, 1864.

233 Fee, twenty dollars balance fee.

Solicitor, Marcus P. Norton.

X      XX      1864      10.38  
 No. 42,920. Blanchard v. James Knibbs, *assignor to*  
*self and Marcus P. Norton, of same place.*  
 Of      Troy,  
 County of Rensselaer,  
 State of New York.

## PUMPS.

- 234    Received May 13, 1864.  
       Petition, May 13, 1864.  
       Affidavit, May 13, 1864.  
       Specification, May 13, 1864.  
       Two drawings, May 13, 1864.  
       Model, May 13, 1864.  
       Cert. dep.  
       Cash fifteen dollars, May 13, 1864.  
       Additional fee cert.  
       One additional fee, cash twenty dollars, May 16,  
 235    1864.  
       Examined May 16, 1864, J. M. Blanchard.  
       Issue, Hayes, May 17, 1864.  
       Four patented May 24, 1864. X.  
       Recorded vol. 162, p. 186.  
       Circular.

MARCUS P. NORTON,  
 Troy, N.Y.

1864.  
 Ex., J. A. W.,  
 E. A. M. P.

236

**Complainant's Exhibit, B.**

SEPTEMBER, 25, 1878.    J. A. S., Ex'r.  
 DEPARTMENT OF THE INTERIOR.—UNITED  
 STATES PATENT OFFICE.

*To all persons to whom these presents shall come, Greeting.*

- 237    This is to certify that the annexed is a true copy  
 from the records of this office of an assignment re-  
 corded in Liber C 7, p. 485, and that said annexed copy

has been compared by me with the original, and that it is a correct transcript therefrom, and of the whole of the original.

**In testimony whereof**, I, W. H. Doolittle, Acting Commissioner of Patents, have caused the seal of the Patent Office to be  
 238 [SEAL.] hereunto affixed this twenty-first day of September, in the year of our Lord one thousand eight hundred and seventy-eight, and of the Independence of the United States the one hundred and third.

W. H. DOOLITTLE,  
*Acting Commissioner.*

**Whereas**, I, James Knibbs of the city of Troy, county of Rensselaer, State of New York, have in-  
 239 vented certain new and useful improvements in pumps for steam fire and other engine pumps, for which I am about to make application for letters-patent of the United States of America; to which application, including model, drawings, and specifications of the said invention and improvements, reference is hereby had; and whereas, Marcus P. Norton, of the said city, county, and State, has agreed to purchase, and has purchased, of and from me, one equal and undivided half, part, or moiety of all my right, title, and interest which I have  
 240 (which is the entire right, title, and interest, and now held by me) into and for the said invention and improvement in consequence of the grant of any letters-patent therefor and thereupon, and has paid to me, the said James Knibbs, the sum of one hundred dollars and other valuable considerations, the receipt of which is hereby acknowledged;

Now, therefore, this indenture of assignment WIT-  
 NESSETH, that for and in consideration of the said sum to me paid, and other valuable considerations which are  
 241 hereby acknowledged, I have sold, assigned, and transferred, and do hereby sell, assign, and transfer, unto the said Marcus P. Norton, his heirs, assigns, or administrators, the full, entire, and exclusive right to all of the

said one equal undivided half, part, or moiety of the said invention and improvements made by me, as fully set forth and described in the model, drawings, and specifications which I have prepared, or caused to be prepared and executed, or which may hereafter be so prepared and executed, preparatory to the obtaining of  
 242 letters-patent therefor and thereupon. And I hereby further sell, assign, and transfer, and have this day sold, assigned, and transferred, unto myself, the said James Knibbs, for and in consideration of the sum of one dollar, the other and remaining half, part, or moiety of the said invention and improvements, as aforesaid described and set forth.

And I do hereby request and fully authorize the Honorable Commissioner of Patents to issue the said letters-patent to the said Marcus P. Norton and said  
 243 James Knibbs, as the sole assignees of my whole right and title thereto, for the sole use, benefit, and behoof of the said Marcus P. Norton and the said James Knibbs, and their heirs, assigns, or administrators.

**In testimony whereof**, I have, on this twenty-seventh day of April, A.D. 1864, hereunto set my hand and seal.

JAMES KNIBBS. [SEAL.]

Signed and sealed in presence of

C. E. PATTERSON,

B. MACGREGOR.

*Rensselaer County, City of Troy, } ss.  
 State of New York.*

On this twenty-seventh day of April, A.D. 1864, before me appeared James Knibbs, to me personally known to be the same person described in, and who executed, the foregoing instrument, and acknowledged that he executed the same for the purposes therein named.

C. E. PATTERSON,

*Commissioner of Deeds, Troy, N.Y.*

Received and recorded May 9, 1864.

Ex., J. A. W.,  
 E. A. M.

244  
 Fifty Cents  
 50  
 1864  
 James Knibbs  
 April 27,  
 1864  
 50

245  
 5 5  
 C. E. P.  
 April 27,  
 1864  
 5 5



**Complainant's Exhibit, C.**

SEPTEMBER 25, 1878. J. A. S., EX'R.

DEPARTMENT OF THE INTERIOR.—UNITED  
STATES PATENT OFFICE.

246 *To all persons to whom these presents shall come,  
Greeting.*

This is to certify that the annexed is a true copy, from the records of this office of the letters-patent granted Knibbs & Norton, dated May 24, 1864, No. 42,920, for improvement in pumps.

In testimony whereof, I, W. H. Doolittle, Acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this twenty-first day of  
247 [SEAL.] September, in the year of our Lord one thousand eight hundred and seventy-eight, and of the independence of the United States the one hundred and third.

W. H. DOOLITTLE,  
*Acting Commissioner.*

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UNITED STATES OF AMERICA.

248 *To all to whom these letters-patent shall come.*

**Whereas**, James Knibbs of Troy, N.Y., has alleged that he has invented a new and useful improvement in pumps (he having assigned his right, title, and interest in said improvement to himself and Marcus P. Norton of same place), which he states has not been known or used before his application, has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer  
249 of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty-five dollars, and

presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose:—

These are, therefore, to grant, according to law, to the said Knibbs and Norton, their heirs, administrators,  
 250 or assigns, for the term of seventeen years from the twenty-fourth day of May, 1864, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said James Knibbs, in the schedule hereunto annexed, and is made part of these presents.

**In testimony whereof,** I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.  
 251  
 [SEAL.] Given under my hand, at the city of Washington, this twenty-fourth day of May, in the year of our Lord one thousand eight hundred and sixty-four, and of the independence of the United States of America the eighty-eighth.

J. P. USHER,  
*Secretary of the Interior.*

Countersigned, and sealed with the }  
 252 seal of the Patent Office. }

D. P. HOLLOWAY,  
*Commissioner of Patents.*

THE SCHEDULE REFERRED TO IN THESE  
 LETTERS-PATENT, AND MAKING PART  
 OF THE SAME.

*To all whom it may concern.*

253 Be it known that I, James Knibbs of the city of Troy, county of Rensselaer, and State of New York, have invented new and useful improvements in pumps for steam fire and other engine pumps; and I do hereby declare that the following is a full, clear, and

exact description thereof, reference being hereby had to the accompanying drawings and to the letters of reference marked thereon, which said drawings make a part of this specification.

Like letters represent and refer to like or corresponding parts.

Fig. 1 is a front view of the pump, and showing my invention and improvements hereinafter described and set forth.

Fig. 2 is a vertical and sectional side view, showing the discharge pipe, or tube, and other parts hereinafter described and set forth.

Fig. 3 is also a vertical and sectional side view, showing the suction or supply pipe, or tube, and other parts connected therewith, and hereinafter described and set forth.

The nature of my invention and improvements consists in the employment of a pipe or tube, or its equivalent, by means of which the force or discharge part of said pump is connected to and with the suction or supply part of said pump, so that one, two, three, or more discharge pipes, or hose, may throw streams of water at the same time and stroke of the piston or operation of said pump, without any waste of water, by the opening of a valve or discharge-pipe, to enable the pump to work successfully and without injury in the throwing of streams of water at fires, &c.

Heretofore, in steam fire-engine pumps constructed for the purpose of throwing *two, three, four*, or more streams of water at one and the same stroke of the piston, there has been a great difficulty attending the practical and successful working of the same whenever it has been desirable to throw but one or two, or perhaps three, streams of water, when the pump is constructed to throw four or more streams of water; the suction or supply of water would in that case be greater than the discharge through the hose-pipes, or tubes, as the case may be, in which one of the remaining discharge-pipes, with the hose-pipe disconnected, or else a waste-water valve, would have to be kept open during the operation of the pump, so as to make the

discharge of water the same in quantity as that received through and by means of the supply or suction part of the pump; for, if the discharge be not the same, or nearly so, as that of the supply, the pump would become somewhat strained and flooded, and would not, after a while, work or operate. The boiler would also become somewhat flooded, and the engine would cease to work. By the opening of a discharge-pipe or wastewater valve, the discharge would become more equal to that of the supply; but here is a great waste of water, as well as the flooding of the street, when such engine is used, which is not only very inconvenient to those who operate the said engine at fires, &c., but is also to some extent injurious to such steam fire-engine.

259 By my said invention or improvements all these difficulties are fully obviated. The force part or section of the said pump being connected to and with the suction or supply part or section in the manner and by the means substantially as herein described and set forth, no discharge-pipe or water-valve is required to be open during the operation of the engine throwing but one or two streams of water at one operation or stroke of the piston. The extra quantity of water thrown into the force or discharge part or section of the pump from the suction or supply part or section, and not discharged through the discharge or hose pipes connected therewith, because the same are closed with one or more exceptions, is conducted, by the means hereinafter described, from the said force part or section of the said pump back into the supply or suction tube, or pipe, connected to and with the said suction or supply part or section of the said pump, and thus the force or discharge part or section of the pump is relieved from any excessive quantity of water, and the waste of water and the flooding of the street prevented, while at the same time the engine and the said pump perform all their respective functions in the most perfect and satisfactory manner, without hindrance or obstruction, and the said pump will throw *one, two, three, four*, or more, streams of water at the same time, the same being regulated by means of a valve hereinafter described and set forth.

To enable others skilled in the art to which my said invention and improvements relate, to make and use  
 262 the same, I will here proceed to describe the construction and operation of the same, which is as follows, to wit: (A) is the pump cylinder, (A') is the lower cylinder head, (A'') is the upper cylinder head, (B) is the suction or supply tube, (C) is a screw-cap, which must be removed when the main hose-pipe leading from the hydrant is to be connected therewith for the purpose of supplying the pump and engine with water. The said supply hose-pipe will be of the required capacity to supply water sufficient for all the discharge  
 263 hose-pipes, be the number thereof more or less. (D) is a tube connecting the force or discharge section of said pump to the vertical valve-tube (E). (F) is a discharge-tube, to which the discharge hose-pipe is connected, which is done in the same manner as described in relation to the said suction or supply pipe or hose. (G,G) is a tube or pipe connecting the force or discharge part or section to and with the suction or supply part or section of the said pump, for the purposes herein described and set forth. (H) is the valve to  
 264 regulate the excessive quantity of water to be returned from the force section through the said tube (G,G) to the said suction or supply pipe (B). If all the hose-pipes are discharging water at the same time, this valve will remain closed. If, however, but *one, two, or three* of the hose-pipes are discharging water at the same time or stroke of the piston, then this valve must be open sufficient to allow of the return of the excessive quantity of water which cannot be discharged by reason of some one or more of said discharge hose-  
 265 pipes being closed, because not required in use. (B') is an air-chamber; (e) is the handle by which the water is shut off or from the discharge-pipe (F) in the usual manner and means; (g) is a valve to let water out at (h), if desirable, in the cleaning of the engine.

Having thus described my said invention, what I claim and desire to secure by letters-patent, is, —

The returning of any excessive water in the force part or section of a steam fire or other engine pump to

the suction part or section thereof, substantially as  
 266 herein described and set forth.

I also claim the connecting of the discharge or force  
 part or section of a steam fire or other engine pump  
 to and with the suction or supply section thereof by  
 means of the tube (G,G) and the regulating valve  
 (H), or any equivalent therefor, substantially as and  
 for the purposes herein described and set forth.

267                    In testimony whereof, I have, on this twenty-  
                          seventh day of April, A.D. 1864, hereto set my  
                          hand.

JAMES KNIBBS.

Witnesses :

C. E. PATTERSON,

B. MCGREGOR,

Ex., J. A. M.

E. A. M.



JAMES KNIBBS'S  
IMPROVEMENT IN PUMPS  
FOR  
STEAM FIRE AND OTHER ENGINE PUMPS.

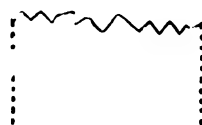


FIG. 1.





FIG. 2.

INVENTOR, JAMES KNIBBS.

WITNESSES:

C. E. PATTERSON,  
B. MACGREGOR.



**FIG. 3.**



### Complainant's Exhibit, D.

SEPTEMBER 25, 1878. J. A. S., Ex'r.

268

#### DEPARTMENT OF THE INTERIOR.—UNITED STATES PATENT OFFICE.

*To all persons to whom these presents shall come, Greeting.*

This is to certify that the annexed is a true copy from the records of this office of an assignment recorded in Liber W 9, p. 15, and that said annexed copy has been compared by me with the original, and that it is a correct transcript therefrom, and of the whole of the original.

In testimony whereof, I, W. H. Doolittle, Acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed, this twenty-first day of September, [SEAL.] in the year of our Lord one thousand eight hundred and seventy-eight, and of the independence of the United States the one hundred and third.

270

W. H. DOOLITTLE, *Acting Commissioner.*

Liber W 9, p. 15. — **Whereas**, letters-patent of the United States of America were duly granted to James Knibbs and Marcus P. Norton of the city of Troy, county of Rensselaer, and State of New York, for and upon certain new and useful improvements in pumps, which said letters-patent bear date the twenty-fourth day of May, A.D. 1864, and to which reference is hereby had for a more full description of the invention, herein and hereby signed ;

271

**And whereas**, the said James Knibbs is now the lawful owner and possessor of one half, part, or moiety of the invention and improvements contained in the letters-patent issued and dated as aforesaid ;

**And whereas,** Lemuel H. Tupper, of the said city of Troy, county and State aforesaid, is desirous of purchasing, and has purchased, of and from me, the said Knibbs, one quarter or fourth part of all my right, title, and interest in, to, and for the invention aforesaid, or one-eighth ( $\frac{1}{8}$ ) of the entire invention contained in the letters-patent, dated and issued as aforesaid ;

272

5 Cts. 5  
J. K.  
August 2,  
1867.  
5 Cts. 5

Now, therefore, this indenture of assignment WITNESSETH, that for and in consideration of the sum of one dollar, and other valuable considerations to me in hand paid, the receipt whereof is hereby acknowledged, I have sold, assigned, and transferred, and do hereby sell, assign, and transfer, unto the said Lemuel

273 H. Tupper, his heirs, administrators, or assigns, one quarter or fourth part of all my right, title, and interest in, to, and for the invention and letters-patent aforesaid, or one-eighth ( $\frac{1}{8}$ ) of the entire letters-patent, dated and issued as hereinbefore set forth. The same to be held and enjoyed by the said Lemuel H. Tupper for his own use, benefit, and behoof, and for the use, benefit, and behoof of his legal representatives, to the full end of the term for which said letters-patent are granted, as fully, freely, and entirely as the same would have been held and enjoyed by me, had this part, assignment, and sale not been made.

274

5 Cts. 5  
J. K.  
August 23,  
1867.  
5 Cts. 5

**In testimony whereof,** I have hereunto set my hand and seal this twenty-third day of August, A.D. 1867.

JAMES KNIBBS. [SEAL.]

Signed and sealed in the }  
presence of }

275

MARCUS P. NORTON,  
CHARLES D. KELLUM.

Recorded September 30, 1867.

Ex., J. A. W.

E. A. M.

**Complainant's Exhibit, E.**

SEPTEMBER 25, 1878.

J. A. T., EX'R.

DEPARTMENT OF THE INTERIOR.—UNITED  
STATES PATENT OFFICE.

276

*To all persons to whom these presents shall come, Greeting.*

This is to certify that the annexed is a true copy from the records of this office of an assignment recorded in Liber I 18, p. 56, and that said annexed copy has been compared by me with the original, and that it is a correct transcript therefrom, and of the whole of the original.

277

**In testimony whereof**, I, W. H. Doolittle, Acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed, this twenty-first day of September, in the year of our Lord one thousand eight hundred and seventy-eight, and of the independence of the United States the one hundred and third.

[SEAL.]

W. H. DOOLITTLE,

*Acting Commissioner.*

278 Liber I 18, p. 56. — **Whereas**, letters-patent of the United States of America were duly granted to James Knibbs of the city of Troy, county of Rensselaer, and State of New York, for and upon certain new and useful improvements in pumps, which said letters-patent bear date the twenty-fourth day of May, A.D. 1864, and to which reference is hereby had for a more full description of the invention herein and hereby assigned;

279 **And whereas**, Lemuel H. Tupper is now the lawful owner and possessor of one-eighth part of the invention and improvement in the letters-patent issued and dated as aforesaid;



**And whereas**, James Knibbs of the city of Troy, State of New York, is desirous of purchasing, and has purchased, of me, the said Tupper, the one-eighth of said patent held by me, and all my right, title, and interest in and to the same invention aforesaid contained in the letters-patent dated and issued as aforesaid;

Now, therefore, this indenture of assignment WIT-  
 280 NESSETH, that for and in consideration of the sum of one dollar, and other valuable considerations to me in hand paid, the receipt whereof is hereby acknowledged, I have sold, assigned, and transferred, and do hereby sell, assign, and transfer, unto the said James Knibbs, his administrators and assigns, the one-eighth part of the said patent held by me, which I previously purchased of the said Knibbs, the same to be held by the said Knibbs for his own proper use and benefit, or  
 281 his legal representatives, to the full end and term for which the said letters-patent are granted, as fully and freely and entirely as the same would have been held and enjoyed by me.

**In testimony whereof**, I have hereunto set my hand and seal this twentieth day of July, A.D. 1874.

LEMUEL H. TUPPER. [SEAL.]

Signed and sealed in the }  
 282        presence of        }  
                  CHAS. M. SAULSON,  
                  JAMES R. TORRANCE.

Recorded July 24, 1874.

Ex., J. A. W.

E. A. M.

### Complainant's Exhibit, F.

SEPTEMBER 25, 1878.

J. A. S., Ex'r.

283 DEPARTMENT OF THE INTERIOR.—UNITED  
STATES PATENT OFFICE.

*To all persons to whom these presents shall come, Greeting.*

This is to certify that the annexed is a true copy, from the records of this office, of an assignment recorded in Liber P 21, p. 181, and that said annexed copy has been compared by me with the original, and that it is a correct transcript therefrom, and of the whole of the original.

284       **In testimony whereof**, I, W. H. Doolittle,  
Acting Commissioner of Patents, have  
caused the seal of the Patent Office to be  
hereunto affixed, this twenty-first day of  
[SEAL.] September, in the year of our Lord one  
thousand eight hundred and seventy-eight,  
and of the independence of the United  
States the one hundred and third.

W. H. DOOLITTLE,  
*Acting Commissioner.*

285       Liber P 21, p. 181. **Whereas**, the letters-patent of  
the United States of America were duly granted to  
James Knibbs and Marcus P. Norton of the city of  
Troy, county of Rensselaer, and State of New York,  
for and upon certain new and useful improvements in  
pumps for steam fire-engines, which bear date the  
twenty-fourth day of May, A.D. 1861, to which refer-  
ence is now and hereby had for a more full description  
of the invention herein and hereby sold, assigned, and  
286 transferred :

**And whereas**, the said Marcus P. Norton is now  
the lawful owner and holder of one-half or moiety part  
of the said letters-patent, and of the invention therein  
contained, the same never having been sold, assigned,  
or transferred, prior to the date hereof. The said

letters-patent are dated as aforesaid, and numbered 42,920;

**And whereas,** Helen M. Ingalls, of the said city of Troy, county and State, is desirous of having and  
 287 acquiring all the right, title, and interest which I now have, or ever had, in, to, or for the said invention, improvements, and letters-patent, and of any and every re-issue of the same; also any and every claim I now have, or ever had, for the past use of the same, or for the sale or manufacture of the said invention and improvements;

Now, therefore, this indenture and assignment and transfer **WITNESSETH**, that for and in consideration of the sum of one hundred dollars to me, the said Marcus  
 288 P. Norton, in hand paid, the receipt of which is now and hereby acknowledged, and in the further and other valuable considerations, the receipt of which is also hereby duly acknowledged, I have sold, assigned, and transferred, and I do now and hereby sell, assign, and transfer, unto the said Helen M. Ingalls, her heirs, assigns, and lawful representatives, all the right, title, and interest which I now have, or ever had, in, to, or for the said invention, improvements, and letters-patent, and of any and every re-issue thereof; and I also now  
 289 and hereby sell, assign, transfer, and convey unto the said Helen M. Ingalls, her heirs, assigns, and lawful representatives, all the right, interest, or claim I now have, or ever had, against any and every person, city, corporation, company, or government, for the past and present use of the said invention and improvements, under the said letters-patent, intending herein and hereby to sell, assign, and transfer unto the said Helen M. Ingalls, and her lawful representatives, all my right, title, interest, or claim for the entire past, and for the  
 290 future, use of the said invention and letters-patent so dated and numbered, and also the entire invention, improvements, and letters-patent aforesaid, and all and every re-issue of the same, as well as full right, liberty, and power to re-issue the said letters-patent whenever it shall be deemed best so to do, each and every of which is to be, and shall be, held and enjoyed by her,

the said Helen M. Ingalls, for her own use, benefit, and behoof, and for the use, benefit, and behoof of her legal representatives, to the full end of the term for  
 291 which the said letters-patent are or were granted and issued, as fully, freely, and entirely as the same would have been held and enjoyed by me if this sale and assignment and transfer had not been made in the manner so as aforesaid.

Hereby selling, assigning, and conveying unto her, the said Helen M. Ingalls, her assigns and lawful representatives, all and every right, interest, privilege, title, or claim, whether pending by suit in court or otherwise, which I now have, or ever have had, in any  
 292 way or manner or form, under the said letters-patent, and any and every re-issue of the same, to the full end of the term of seventeen years for which said letters-patent were granted, on and commencing the twenty-fourth day of May, A.D. 1864, with full right, power, and authority to enforce, settle, and adjust the same, for any and every manufacture, sale, or use of the said invention, improvements, and letters-patent.

**In testimony whereof**, I have, on this nineteenth day of March, A.D. 1877, hereunto set my  
 293 hand and seal.

MARCUS P. NORTON.

[SEAL.]

Signed, sealed, and delivered }  
 in the presence of }  
 JOHN W. SMITH.

*Town of Canaan, County of Columbia,* } ss.  
*and State of New York.*

On this twentieth day of March, A.D. 1877, personally came before me Marcus P. Norton, to me  
 294 personally known to be the person named in, and who executed, the foregoing deed of assignment; and he acknowledged to me, in due form of law, that he executed said instrument or deed of assignment, and for the purposes therein named and set forth.

JOHN W. SMITH, *Justice of the Peace.*

Recorded April 12, 1877.

Ex., J. A. W.,  
 E. A. M.

**Complainant's Exhibit, G.**

295

SEPTEMBER 25, 1878. J. A. S., Ex'r.

DEPARTMENT OF THE INTERIOR. — UNITED  
STATES PATENT OFFICE.*To all persons to whom these presents shall come, Greeting.*

This is to certify that the annexed is a true copy from the records of this office of an assignment recorded in Liber G 22, p. 85, and that said annexed  
 296 copy has been compared with the original, and that it is a correct transcript therefrom, and of the whole of the original.

**In testimony whereof**, I, W. H. Doolittle, Acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this twenty-first day of September,  
 [SEAL.] in the year of our Lord one thousand eight hundred and seventy-eight, and of the independence of the United States the one hundred and third.

297

W. H. DOOLITTLE,  
*Acting Commissioner.*

Liber G 22, p. 85. — **Whereas**, the letters-patent of the United States of America were duly granted to James Knibbs and Marcus P. Norton of the city of Troy, county of Rensselaer, and State of New York, for and upon certain new and useful improvements in  
 298 pumps for steam fire and other engine pumps, which bear date the twenty-fourth day of May, 1864, and which are numbered 42,920, to which reference is now and hereby had for a more full description of the invention and letters-patent herein and hereby sold, assigned, and transferred;

**And whereas**, the said James Knibbs is now the lawful owner and holder of one-half or moiety part of the said letters-patent, and of the invention therein

contained, the said one-half part of all the right, title,  
 299 and interest in, to, or for the said letters-patent and of  
 said invention being at this time fully and entirely  
 vested in the said James Knibbs; and whereas, Chris-  
 topher C. Campbell of the town of Chatham, residing  
 at the village of East Chatham in said town, county of  
 Columbia, and State of New York, is desirous of hav-  
 ing and acquiring all the right, title, and interest afore-  
 said, which I, the said James Knibbs, now have, or  
 ever had, in, to, or for the said invention, improvements,  
 and letters-patent, and of any and every re-issue of the  
 300 same; also any and every right, claim, or demand  
 which I now have, or ever had, to or for the past use of  
 the same, or for the sale, manufacture, or use of the  
 said invention, improvements, or letters-patent;

Now, therefore, this indenture, or deed of assign-  
 ment and transfer, WITNESSETH, that for and in con-  
 sideration of the sum of one hundred dollars to me,  
 the said James Knibbs, in hand this day paid by the  
 said Christopher C. Campbell, the receipt of which is  
 now and hereby acknowledged, and in the further and  
 301 other valuable considerations, the receipt of which is  
 also now and hereby duly acknowledged, I have, on  
 this day, sold, assigned, and transferred, and I do now  
 and hereby sell, assign, and transfer, unto the said  
 Christopher C. Campbell, his heirs, assigns, and lawful  
 representatives, all the right, title, and interest afore-  
 said named, which I now have, or ever had, in, to, or  
 for the said invention, improvements, and letters-pat-  
 ent, and also of any and every re-issue thereof; and I  
 also now and hereby sell, assign, and transfer and con-  
 302 vey unto the said Christopher C. Campbell, his heirs,  
 assigns, and lawful representatives, all and every of the  
 right, interest, claim, or demand which I now have, or  
 ever had, against any and every person, city, corpora-  
 tion, company, or government for the past or present  
 use of the said invention and improvements under the  
 said letters-patent, or for any infringement of or upon  
 the said letters-patent dated so as aforesaid, to wit, the  
 twenty-fourth day of May, 1864, and numbered 42,920.  
 intending herein and hereby to sell, assign, and convey

303 unto him, the said Christopher C. Campbell, his lawful  
 representatives, all and every of my right, title, in-  
 terest, claim, or demand for the entire past, present, or  
 future use, manufacture, or sale of the invention and  
 letters-patent so dated and numbered; and also the  
 entire invention, improvements, and letters-patent  
 aforesaid, and each and every re-issue of the said let-  
 ters-patent, as well as full right, liberty, and power to  
 re-issue the same whenever it shall be deemed best so  
 to do; each and every of which is to be, and shall be,  
 304 held and enjoyed by him, the said Christopher C.  
 Campbell, for his own use, benefit, and behoof, and for  
 the use, benefit, and behoof of his legal representatives  
 to the full end of the term of seventeen years for which  
 the said letters patent were granted and issued on the  
 said twenty-fourth day of May, A.D. 1864, as fully,  
 freely, and entirely as the same would have been held  
 and enjoyed by me, if this sale, assignment, and trans-  
 fer had not been made in the manner so as aforesaid.

Herein and hereby selling, assigning, and conveying  
 305 unto him, the said Christopher C. Campbell, his as-  
 signs, and lawful heirs and representatives, all and  
 every right, title, interest, privilege, claim, or demand  
 of every name or nature, whether pending in court  
 or otherwise, which I now have, or ever had, under the  
 said letters-patent, and any and every re-issue of the  
 same, to the full end of the said term of seventeen  
 years for which the said letters-patent were granted,  
 on and commencing with the twenty-fourth day of  
 May, A.D. 1864, with the full right, power, and au-  
 306 thority to sue for, to enforce, to settle, and adjust the  
 same, as he, the said Christopher C. Campbell, shall  
 deem to be proper and advisable, for any and every  
 manufacture, sale, or use of the said invention, im-  
 provements, and letters-patent so dated and numbered.

And the said Christopher C. Campbell, as and for  
 further and additional consideration in the sale, pur-  
 chase, assignment, and transfer of the said letters-pat-  
 ent and invention so as aforesaid made, shall pay unto  
 the said James Knibbs, or his lawful representatives,  
 307 the sum of ten thousand dollars out of any sales,

settlements, collections, or recoveries, had or made of or for the use, manufacture, or sale of the said invention, and letters-patent. The said sum of ten thousand dollars shall be paid to the said James Knibbs by the said Christopher C. Campbell out of the money had or received from such settlements, collections, or recoveries, hereinbefore stated, at the rate of ten per cent upon all such settlements, collections, or recoveries for infringements upon the said letters-patent, until the said  
 308 sum of ten thousand dollars is paid; and after that no other or further payments are to be made by said Campbell to said Knibbs.

**In testimony whereof**, I have, on this tenth day of October, A.D. 1877, hereunto set my hand and seal.

JAMES KNIBBS. [SEAL.]

Signed, sealed, and delivered }  
 309 in presence of }  
 MARCUS P. NORTON.

*City of Troy, County of Rensselaer,* } ss.  
*State of New York.*

On this eleventh day of October, A.D. 1877, personally came before me James Knibbs, to me personally known to be the person named in, and who executed, the foregoing deed of assignment and transfer, and he acknowledged to me, in due form of law, that  
 310 he executed said instrument or deed of assignment, and for the purposes therein named and set forth.

ISAAC W. CRESSEY, *Notary Public*,  
 Rensselaer County, N.Y.

*State of New York, City of Troy,* }  
*Rensselaer County, Clerk's* } ss.  
*Office.*

I, Eben C. Reynolds, clerk of the said county, and also clerk of the supreme and county courts, being  
 311 courts of record held therein, do hereby certify that Isaac W. Cressey, whose name is subscribed to the



certificate of proof or acknowledgment of the annexed instrument, was, at the time of taking such proof or acknowledgment, a notary public of the county of Rensselaer, dwelling in said county, and duly authorized to take the same; that I am well acquainted with the handwriting of the said notary, and verily believe that his signature to the said certificate of proof or acknowledgment is genuine, and that said instrument  
 312 is executed and acknowledged according to the laws of the State of New York.

**In testimony whereof**, I have hereunto set my  
 [SEAL.] hand, and affixed the seal of said county,  
 this eleventh day of October, A.D. 1877.

E. C. REYNOLDS, *Clerk*.

Recorded October 19, 1877.

Ex., J. A. W.

E. A. M.

313

### **Complainant's Exhibit, H.**

SEPTEMBER 25, 1878. J. A. S., Ex'r.

#### **DEPARTMENT OF THE INTERIOR.—UNITED STATES PATENT OFFICE.**

*To all persons to whom these presents shall come, Greeting.*

This is to certify that the annexed is a true copy from the records of this office of an assignment re-  
 314 corded in Liber G 22, p. 89, and that said annexed copy has been compared by me with the original, and that it is a correct transcript therefrom and of the whole of the original.

**In testimony whereof**, I, W. H. Doolittle, Acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed, this twenty-first day of September,  
 [SEAL.] in the year of our Lord one thousand eight hundred and seventy-eight, and of the independence of the United States the one hundred and third.

315

W. H. DOOLITTLE, *Acting Commissioner*.

Liber G 22, p. 89. — **Whereas**, the letters-patent of the United States of America were duly granted and issued to James Knibbs and Marcus P. Norton of the city of Troy, county of Rensselaer, and State of New York, for and upon certain new and useful improvements in pumps for steam fire engine and other engine  
 316 pumps, which bear date the twenty-fourth day of May, A.D. 1864, and which are numbered 42,920, to which reference is now and hereby had for a more full description of the invention herein and hereby sold, assigned, and transferred in the manner hereinafter stated ;

**And whereas**, the said Marcus P. Norton did, on or about the nineteenth day of March, A.D. 1877, sell, assign, and convey unto Helen M. Ingalls of the said city of Troy, county and State, each and every of his  
 317 and letters-patent so dated and numbered, which deed of assignment was duly of record in the Patent Office of the United States on the twelfth day of April, A.D. 1877, in Liber P 21, p. 181, of Transfers of Patents, to which said deed of assignment so dated and of record reference is now and hereby had ;

**And whereas**, I, the said Helen M. Ingalls, am now the lawful owner and holder of one-half or moiety part of the said letters-patent, and of the invention therein contained, as will more fully and at large appear from  
 318 the said deed of assignment last above mentioned and described. And whereas, Christopher C. Campbell of the town of Chatham, residing at the village of East Chatham in said town, county of Columbia, and State of New York, is desirous of having and acquiring all the right, title, and interest which I now have, or ever had, in, to, or for the said invention, improvements, and letters-patent, and of any and every re-issue of the same ; also any and every claim or demand I now have, or ever had, for the past use, manufacture, and  
 319 sale of the same, and conveyed to me by the said Marcus P. Norton by the said deed of assignment, dated as aforesaid ; to wit, the nineteenth day of March, A.D. 1877, and recorded in said Patent Office on the twelfth day of April, A.D. 1877, in Liber P 21, p. 181, as aforesaid.

Now, therefore, this indenture, or deed of assignment and transfer, WITNESSETH, that for and in consideration of the sum of one hundred dollars to me, the said Helen M. Ingalls, in hand paid by the said Christopher C. Campbell, the receipt of which is now and hereby acknowledged, and in the further and other valuable considerations, the receipt of which is also now and hereby acknowledged, I have sold, assigned, and transferred, and I do now and hereby sell, assign, and transfer, unto the said Christopher C. Campbell, his heirs, assigns, and lawful representatives, all the right, title, and interest which I now have, or ever had, in, to, or for the said invention, improvements, and letters-patent, and of any and every re-issue thereof; and I also now and hereby

321 by sell, assign, and transfer and convey unto the said Christopher C. Campbell, his heirs, assigns, and lawful representatives, all the right, title, interest, claim, or demand I now have, or ever had, against any and every person, city, corporation, company, or government, for the past use, manufacture, or sale of the said invention and letters-patent, intending herein and hereby to sell, assign, and convey unto the said Christopher C. Campbell, his lawful representatives, all and every of my right, title, interest, claim, or demand for the entire

322 past, present, and future use, sale, or manufacture of the said invention, improvements, and letters-patent, so dated and numbered as aforesaid; also the entire invention, improvements, and letters-patent aforesaid, and all and every re-issue of the same, as well as the full right, liberty, and power to re-issue the said letters-patent, as well as to sue for and recover any and all past infringements upon the said letters-patent, each and every of which is to be, and shall be, held and enjoyed by him, the said Christopher C. Campbell, for

323 his own use, benefit, and behoof, and for the use, benefit, and behoof of his legal representatives, to the full end of the term of seventeen years for which the said letters-patent were granted and issued, as fully, freely, and entirely as the same would have been held and enjoyed by me if this sale, assignment, and transfer had not been made in the manner as herein stated and set forth.

Hereby selling, assigning, and conveying unto him-  
 the said Christopher C. Campbell, his assigns and law-  
 324 ful representatives, all and every right, interest, title,  
 privilege, claim, or demand of every name and nature  
 whatsoever, whether pending by suit in court or other-  
 wise, which I now have, or ever had, in any way, man-  
 ner, or form, under the said letters-patent, and any and  
 every re-issue of the same, to the full end of the term  
 of seventeen years for which said letters-patent were  
 granted and issued, on and commencing with the  
 twenty-fourth day of May, A.D. 1864, with full-right,  
 power, and authority to sue for any and all infringe-  
 325 ments of said letters-patent, and to enforce, settle, and  
 adjust the same in court or otherwise, for any and  
 every manufacture, sale, or use of the said invention,  
 improvements, and letters-patent.

And the said Christopher C. Campbell, as and for  
 the further and additional consideration hereinbefore  
 named or referred to, in and for the sale, purchase,  
 assignment, and transfer so as aforesaid made by me,  
 the said Helen M. Ingalls, of the said invention and  
 letters-patent so dated and numbered, shall pay unto  
 326 me, the said Helen M. Ingalls, my heirs, assigns, or  
 lawful representatives, one-half or moiety part of any  
 and all sums of money received or had for and on  
 account of the said invention and letters-patent, from  
 any source whatever, either for the use, manufacture,  
 or sale of the said invention or letters-patent, after  
 deducting therefrom one half of all the actual and  
 necessary expenses for settlement and collecting for  
 the use, sale, manufacture, or for the infringement of  
 the said letters-patent. The said one-half part to be  
 327 paid out of each and every sale, settlement, or collection  
 made for any use or manufacture of the said invention  
 and letters-patent, either by or without a suit in court,  
 for the purposes hereinbefore stated; and any failure  
 to perform according to the terms and conditions here-  
 in contained, on the part of the said Christopher C.  
 Campbell, his heirs or assigns or legal representatives,  
 shall render this deed of assignment and transfer void,  
 and of none effect whatever; and the same shall there-  
 after be null and void, and of no effect.

328      **In testimony whereof**, I have, on this tenth day of October, A.D. 1877, hereunto set my hand and seal.

HELEN M. INGALLS. [SEAL.]

Signed, sealed, and delivered }  
in presence of }  
MARCUS P. NORTON.

*Town of Canaan, County of Columbia, }  
State of New York. }*

329      On this twelfth day of October, A.D. 1877, personally came before me Helen M. Ingalls, to me personally known to be the person named in, and who executed, the foregoing deed of assignment; and she duly acknowledged to me, in due form of law, that she executed said instrument or deed of assignment, and for the purposes therein named and set forth.

JOHN W. SMITH,  
*Justice of the Peace in and for the  
County of Columbia, State of New York.*

330      Recorded October 19, 1877.  
Ex., J. A. W.,  
E. A. M.

### **Complainant's Exhibit, N.**

OCTOBER 26, 1878. J. A. S., EX'R.

FIRE-DEPARTMENT, CITY OF NEW YORK.

331      Office of Repair-Shops, 130 and 132 West Third Street.  
NEW YORK, October 4, 1878.

*To Chiefs GIEQUEL and FISHER.*

SIRS, — This will introduce to you Mr. S. P. Kittle, who is desirous of seeing your battalion engines. Please give him the required information.

Yours,

GILBERT J. ORR,  
*Chief of Battalion.*

Headquarters, 5th Battalion, 132 West Tenth Street.

332      Headquarters, 8th Battalion, 160 East Thirty-third Street, near Third Avenue.

**Complainant's Exhibit, O.**

OCTOBER 30, 1878. J. A. S., Ex'r.

**In the Circuit Court of the United States,**

IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.

333 SECOND CIRCUIT.

IN EQUITY.

CHRISTOPHER C. CAMPBELL,

*Complainant, and Assignee in Trust,**versus*THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK,*Defendants.*

334 THE PRESIDENT OF THE UNITED STATES OF AMERICA, to JOSEPH L. PERLEY and JOHN KELLY  
*Greeting.*

We command you, that, all and singular business and excuses laid aside, you and each of you be and appear in your proper persons before John A. Shields, an examiner appointed by the Circuit Court of the United States of America, for the Southern District of New York, in the Second Circuit, at his office at the United-States Court Rooms, United-States Court and

335 Post-Office Building, in the city of New York, in the said Southern District of New York, on the thirtieth day of October, one thousand eight hundred and seventy-eight, at half-past eleven o'clock in the forenoon of the same day, to testify all and singular what you and each of you may know in a certain cause, now depending undetermined in the Circuit Court of the United States, for the Southern District of New York, wherein Christopher C. Campbell is complainant, and the Mayor, Aldermen, and Commonalty of the City of

336 New York are defendants, on the part of the complain-

ant; and this you or either of you are not to omit, under the penalty upon each and every one of you of two hundred and fifty dollars.

**Witness**, Hon. Morrison R. Waite, Chief Justice of the Supreme Court of the United States, at the city of New York, the twenty-ninth day of October, in the year of our Lord one thousand eight hundred and seventy-eight.

337 [L. s.]

JOHN I. DAVENPORT,  
*Clerk.*

### **Complainant's Exhibit, P.**

OCTOBER 30, 1878. J. A. S., Ex'r.

MANCHESTER, February 21, 1877.

THE FIRE-DEPARTMENT OF THE CITY OF NEW YORK,

To AMOSKEAG MANUFACTURING CO., *Dr.*

338 E. A. STRAW, *Agent.*

BILL 42.

For four (4) third-class steam fire-engines, as per contract, dated November 15, 1876, viz.:—

	1 engine, No. 516, delivered December 20, 1876 . . . . .	\$3,750 00
	1 engine, No. 517, delivered January 4, 1877 . . . . .	3,750 00
	1 engine, No. 519, delivered January 30, 1877 . . . . .	3,750 00
339	1 engine, No. 520, delivered February 23, 1877 . . . . .	3,750 00
	<b>CASH.</b>	<b>\$15,000 00</b>

I hereby certify that the above engines have been received.

GILBERT J. ORR,  
*Chief of Battalion and Repair-Shops.*

Please remit by draft on Boston or New York, payable to the order of E. A. Straw, agent.

A true copy.

D. A. SCHIERENBECK.

**Complainant's Exhibit, Q.**

OCTOBER 30, 1878. J. A. S., Ex'r.

FIRE DEPARTMENT, CITY OF NEW YORK.

NEW YORK, February 27, 1877.

*To the Hon. Board of Fire Commissioners.*

841 GENTLEMEN, — I certify that the engines charged for in the above bill were duly received within the periods prescribed by the contract bearing date November 15, 1876; that each of them was thoroughly examined and tested, and found to be strictly in accordance with specification annexed hereto; that they were accordingly accepted by me, and that the price charged is correct and according to contract.

Respectfully,

GILBERT J. ORR,

342 *Chief Battalion in charge Repair-Shops.*

A true copy.

D. A. SCHIERENBECK.

**Complainant's Exhibit, R.**

OCTOBER 30, 1878. J. A. S., Ex'r.

343 VOUCHER SCHEDULE.

THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK,

*To AMOSKEAG MANUFACTURING COMPANY, Dr.*

FEBRUARY 21, 1877.

For four third-class steam fire-engines, as  
per contract November 15, 1876 . . . \$15,000 00  
Appropriation for 1876, as per contract No. 3,868.

D. A. SCHIERENBECK,

*Assistant Auditor.*

344 A true copy.

D. A. SCHIERENBECK.



*City and county of New York, ss.*

Ezekiel A. Straw, being duly sworn, deposes and says that the items in the bills specified in the above schedule are correct; that the services specified and articles therein enumerated have, in fact, been performed and furnished, and by due authority; that the prices charged therein are reasonable and just; that no perquisites, commissions, or allowances of any kind  
 345 other than those stated in the said account have been or will be paid, directly or indirectly, in consideration of the procurement of said articles or services, and that the said bills have not been, either in whole or any part, paid, satisfied, or assigned, and that the same are now justly due.

E. A. STRAW.

Sworn to before me, March 7, 1877.

346 W. C. EMMET,  
*Commissioner.*

We certify that we have examined the bills of the Amoskeag Manufacturing Company, which are hereto annexed, and specified in the above schedule, and amounting to fifteen thousand dollars, and that they are correct and just; that the articles enumerated in the said bills have been received in good condition by the fire-department of the city of New York, solely for its use, and were necessary for the lawful uses and pur-  
 347 poses of the said department; that the prices charged therein are reasonable and proper, and that the amount of said bills does not exceed the unexpended balance of the appropriation duly made to the said department therefor.

A certificate of the necessity of the above expenditure was placed on file in this department before the expenditure was incurred.

348 JOSEPH L. PERLEY,  
 ROSWELL D. HATCH,  
 VINCENT C. KING,  
*Commissioners.*

Dated February 28, 1878.

DEPARTMENT OF FINANCE,  
AUDITING BUREAU, March 1, 1877.

I certify to the comptroller this account of the Amoskeag Manufacturing Company, which I have examined, audited, revised, allowed, and settled at the sum of \$15,000. My reasons for the allowance thereof are that I find the work was performed under, and the  
349 prices fixed by, a contract duly authorized, the terms of which are properly certified to have been fully complied with.

D. JACKSON,  
*Auditor of Accounts.*

NEW YORK, March 7, 1877.

Received of John Kelly, comptroller, warrant No. 4,665, for the sum of fifteen thousand dollars, in full payment of above account.  
350 \$15,000.

E. A. STRAW,  
*Attorney for Amoskeag Manufacturing Company.*

**Complainant's Exhibit, S.**

OCTOBER 30, 1878. J. A. S., EX'R.

351 CONTRACT SUMMARY.

City of New York. Department of Finance. Comptroller's Office.

Contract No. 3,868. Department of Fire. Dated November 15, 1876. Filed November 25, 1876.

Statement of estimates and account in the matter of contract for four third-class steam fire-engines, Amoskeag Manufacturing Company, contractors.

Names of sureties, Marcus L. De Voursney, Andrew De Voursney.

352 Amount of bond \$10,000.

Contract completed and paid March 7, 1877.

Estimate, four steam fire-engines complete, \$15,000.

March 7, 1877, amount paid, \$15,000 in full.

## GENERAL RELEASE.

*To all to whom these presents shall come, or may concern,  
Greeting.*

**Know ye**, that we, Amoskeag Manufacturing Company, of Manchester, N.H., by Charles A. Luce, agent, for and in consideration of the sum of fifteen thousand dollars, lawful money of the United States of America, to us in hand paid by the Mayor, Aldermen, and Commonalty of the City of New York, have remised, released, and forever discharged, and by these presents do, for ourselves, our heirs, executors and administrators and assigns, remise, release, and forever discharge, the said the Mayor, Aldermen, and Commonalty of the City of New York, their successors and assigns, of and from all and all manner of action and actions, cause and causes of action, suits, debts, 353 dues, sums of money, accounts, reckonings, bonds, bills, specialties, covenants, contracts, controversies, agreements, promises, variances, trespasses, damages, judgments, extents, executions, claims, and demands whatsoever, in law or in equity, which against them we ever had, now have, or which our heirs, executors, or administrators and assigns hereafter can, shall, or may have, for, upon, or by reason of a certain contract or agreement made the fifteenth day of November, A.D. 1876, by and between Amoskeag Manufacturing Company, of Manchester, N.H., and the said Mayor, Aldermen, and Commonalty of the City of New York, for 354 four third-class steam fire-engines, or by reason of any matter, cause, or thing whatsoever resulting or arising therefrom from the beginning of the world to the day of the date of these presents.

**In witness whereof**, we have hereunto set our hands and seals the seventh day of March, in the year one thousand eight hundred and seventy-seven.

356

CHAS. A. LUCE, Agt.

[SEAL.]

E. A. STRAW,

[SEAL.]

*Attorney for Amoskeag Manufacturing Company.*

Sealed and delivered in the presence of  
W. C. EMMET.

FINANCE DEPARTMENT, COMPTROLLER'S OFFICE,  
New York, March 7, 1877.

\$15,000.

Received from John Kelly, comptroller, Warrant No. 4,665, being for the sum of fifteen thousand dollars in full of the within contract (numbered 3,868), for "4" third-class steam fire-engines.

CHAS. A. LUCE,

*Agent for Amoskeag Manufacturing Company.*

FIRE-DEPARTMENT. — CONTRACT.

This agreement, made, entered into, and concluded, this fifteenth day of November, in the year one thousand eight hundred and seventy-six, by and between the Mayor, Aldermen, and Commonalty of the City of New York, parties of the first part, by Joseph L. Perley, Roswell D. Hatch, and Vincent C. King, the Fire Commissioners, composing the board at the head of the fire-department of the city of New York, acting for and on behalf of the said parties of the first part, and the Amoskeag Manufacturing Company of Manchester, N.H., by Charles A. Luce, agent, parties of this second part,

WITNESSETH, that the said parties to these presents, each in consideration of the covenants, promises, and agreements herein contained on the part of the other to be performed, done, kept, and fulfilled, have covenanted, promised, and agreed, and do hereby covenant, promise, and agree, each to and with the other as follows: —

The parties of the second part shall and will build for, and furnish and deliver to, the said parties of the first part for the consideration hereinafter mentioned, four (4) third-class steam fire-engines, each of the same to be built, made, and completed in all its parts and particulars in a good and workmanlike manner, and strictly in conformity with the specifications therefor, which are hereto annexed, and to be subject to the acceptance or rejection of the officer in charge of the repair-shops of the said fire-department, or such other person or persons as the said parties of the first part

359 Specification of articles to be furnished for work to be done.

may designate, whose certificate of acceptance shall be required before the payment of any instalment of money shall be demanded by the parties of the second part, under or by virtue of this contract.

- 361 The said steam fire-engines shall be delivered at the repair-shops of the said fire-department at Nos. 130 and 132 West Third Street, in New York City, as follows: The first, on or before the expiration of the sixth week after the execution of this contract; the second, on or before the expiration of the ninth week after the execution of this contract; the third, on or before the expiration of the twelfth week after the execution of this contract; and the fourth, on or before the expiration of the fifteenth week after the execution of this contract.

To furnish security.

The said parties of the second part shall and will give to the said parties of the first part security to the amount and in the manner prescribed by law and ordinance for the full and faithful performance by them of this contract, and all the covenants, provisions, agreements, terms, and conditions herein contained on their part, to be performed, done, kept, observed, and fulfilled.

363 Amount and manner of payment.

- On full and entire performance and observance by the said parties of the second part of this contract, and all the covenants, provisions, agreements, terms, and conditions herein contained on the part of the said parties of the second part to be performed, done, kept, observed, and fulfilled, and on said parties of the second part presenting to the proper officer of said parties of the first part the certificate of said board to such performance and observance, the parties of the first part shall and will pay to the said parties of the second part the sum of fifteen thousand (\$15,000) dollars, as follows: And it is hereby expressly agreed and understood by and between the parties hereto, that the said parties of the first part, their successors and assigns, shall not, nor shall any department or officer of the city of New York, be precluded or estopped, by any return or certificate made or given by any engineer,

inspector, or other officer, agent, or appointee of said fire-department, or said parties of the first part under or in pursuance of any thing in this agreement contained, from at any time showing the true and correct amount and character of the work which shall have been done, and materials which shall have been furnished, by the said parties of the second part, or any other person or persons under this agreement.

365 And the said parties of the second part  
*Assignments.* hereby covenant and agree that they will not assign by power of attorney or otherwise any of the moneys payable under this agreement, unless by and with the consent of the said Board of Fire Com-  
 366 missioners, to be signified by indorsement on this agreement.

And the said parties of the second part  
*Filing of liens.* hereby further agree that they will furnish the said fire-department with satisfactory evidence that all persons who have done work or furnished materials under this agreement, and who may have given written notice to the said department, or to the finance department of the city of New York, before or within ten days after the final completion and accept-  
 367 ance of the whole work under this contract, that any balance for such work or material is due and unpaid, have been fully paid or satisfactorily secured. And, in case such evidence be not furnished as aforesaid, such amount as may be necessary to meet the claims of the persons aforesaid shall be retained from the moneys due the said parties of the second part under this agreement, until the liabilities aforesaid shall be fully discharged or such notice withdrawn.

To each and all the covenants, provisions, agree-  
 368 ments, terms, and conditions herein contained on the part of the said parties of the first part to be performed, done, kept, observed, and fulfilled, they bind themselves, their successors, and assigns.

And to each and all the covenants, provisions, agreements, terms, and conditions herein contained, on the part of the said parties of the second part to be performed, done, kept, observed, and fulfilled, they bind

themselves, their heirs, executors, administrators, and  
 assigns, and each and every of them, jointly and sev-  
 369 erally.

**In witness whereof**, the said members of the said  
 Board of Fire Commissioners, acting for and  
 on behalf of the said parties of the first part  
 and the said parties of the second part, have  
 hereunto set their hands and seals the day  
 and year first above written.

JOSEPH L. PERLEY,  
 ROSWELL D. HATCH,  
 370 VINCENT C. KING,  
 AMOSKEAG M'F'G CO. (Manchester, N.H.),  
 By CHAS. A. LUCE, *Agent*.

Signed and sealed in the presence of  
 DANIEL GRAHAM.

*State of New York,* } ss.  
*City and County of New York.* }

On this fifteenth day of November, A.D. 1876, per-  
 371 sonally before me came Joseph L. Perley, Roswell D.  
 Hatch, and Vincent C. King, to me personally known,  
 and known to me to be the persons described in, and  
 who executed, the foregoing contract, and severally  
 acknowledged that they executed the same, as the  
 commissioners at the head of the fire-department of the  
 city of New York, and on behalf of the Mayor, Alder-  
 men, and Commonalty of the City of New York.

DANIEL GRAHAM,  
*Notary Public 110,*  
 372 New York County.

*State of New York,* } ss.  
*City and County of New York.* }

On this fifteenth day of November, A.D. 1876, per-  
 sonally before me came Charles A. Luce, agent for the  
 Amoskeag Manufacturing Company, Manchester, N.H.,  
 to me personally known, and known to me to be the

person described in, and who executed, the foregoing contract, and acknowledged that he executed the same.

373

DANIEL GRAHAM,  
*Notary Public 110,*  
 New York County.

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BOND.

Bond.

**Know all men by these presents,** that we, the Amoskeag Manufacturing Company of Manchester, N.H., by Charles A. Luce, their  
 374 agent at the city of New York, Marcus L. De Voursney and Andrew De Voursney of the city of New York, are held and firmly bound unto the Mayor, Aldermen, and Commonalty of the City of New York, in the sum of ten thousand dollars, lawful money of the United States of America, to be paid unto the said Mayor, Aldermen, and Commonalty, or to their certain attorneys, successors, or assigns; for which payment well and truly to be made we and each of us do bind ourselves, our and each of our heirs, executors, and  
 375 administrators, jointly and severally, firmly by these presents.

Sealed with our seals.

Dated the fifteenth day of November, in the year one thousand eight hundred and seventy-six.

**Whereas,** by a certain contract in writing, bearing even date with these presents, and one part whereof is hereunto annexed, the above bounden Amoskeag Manufacturing Company have covenanted, promised, and agreed to build for, furnish, and deliver the above  
 376 named obligees, four (4) third-class steam-engines, as will in the said contract more fully and at large appear;

**And whereas,** the said Amoskeag Manufacturing Company, in and by said contract, have further covenanted, promised, and agreed to give to the said above-named obligees security to the amount and in the manner prescribed by law and ordinance for the full and faithful performance by them of the said contract,



and all the covenants, provisions, agreements, terms,  
877 and conditions in said contract contained on their part  
to be done, performed, kept, and observed ;

Now, therefore, the condition of the above obligation is such, that, if the said Amoskeag Manufacturing Company shall faithfully, fully, and entirely do, perform, keep, and observe the said contract, and each and every of the covenants, provisions, agreements, terms, and conditions on their part to be done, performed, kept, and observed, then this obligation shall be void ; otherwise to remain in full force and virtue.

878 AMOSKEAG M'F'G CO. (Manchester, N.H.),  
By CHAS. A. LUCE, *Agent*.  
MARCUS L. DE VOURSNEY,  
ANDREW DE VOURSNEY.

Signed and sealed in the presence of  
DANIEL GRAHAM.

*State of New York,* }  
*City and County of New York.* } ss.

879 On this fifteenth day of November, A.D. 1876, personally came before me Marcus L. De Voursney, Andrew De Voursney, and Charles A. Luce, to me personally known, and known to me to be the same persons described in, and who executed, the above obligation, and severally acknowledged that they executed the same.

DANIEL GRAHAM,  
*Notary Public 110,*  
New York County.

880

*State of New York,* }  
*City and County of New York.* } ss.

On this                      day of                      A.D. 187 ,  
personally before me came  
to me personally known, and known to me to be the  
same person described in, and who executed, the above  
obligation, and severally acknowledged that  
executed the same.

381      *State of New York,*      }  
           *City and County of New York.* } ss.

I, Marcus L. De Voursney, being duly sworn, depose and say, I am a freeholder in the city of New York, reside at 389 Broome Street, and am worth the sum of ten thousand (\$10,000) dollars over and above all my debts and liabilities, including my liabilities as bail, security, and otherwise, and over and above all my property which is exempt by law from execution.

MARCUS L. DE VOURSNEY.

382

Subscribed and sworn to before me, this fifteenth day of November, 1876.

DANIEL GRAHAM, *Notary Public 110,*  
    New York County.

*State of New York,*      }  
           *City and County of New York.* } ss.

383      I, Andrew De Voursney, being duly sworn, depose and say, I am a freeholder in the city of New York, reside at 389 Broome Street, and am worth the sum of ten thousand dollars over and above all my debts and liabilities, including my liabilities as bail, security, and otherwise, and over and above all my property which is exempt by law from execution.

ANDREW DE VOURSNEY.

Subscribed and sworn to before me, this fifteenth day of November, 1876.

384      DANIEL GRAHAM, *Notary Public 110,*  
    New York County.

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#### SPECIFICATIONS OF THIRD-CLASS ENGINES.

Boiler.      Boiler to be vertical, 27½ inches diameter  
    and 60 inches long, and to contain 199 com-  
    position tubes 18 inches long by 1½ inches diameter; to  
    be made from the best steel boiler-plate; outside shall be

- 385  $\frac{3}{16}$  inch thick; inside shell  $\frac{3}{16}$  inch thick. Tube-heads to be  $\frac{5}{16}$  inch thick, and thoroughly riveted and stayed. Outside to be well cased in wood, and covered with Russia iron properly banded with brass (raised moulding). To have on safety-valve  $2\frac{1}{2}$  inches in diameter, the same in construction as on Engine No. 18 of this department, and to be supplied with heavy brass gauge-pipe, with four gauge-cocks at  $4\frac{1}{2}$  inch centres; the third gauge to be on a line with upper tube-sheet. Boiler to be constructed in form as the boilers on the regular engines of this department.

Main-water  
pump.

The main pump to be a double-acting vertical pump made of brass, with cylinder  $4\frac{1}{2}$  inches inside diameter, and having a stroke of 9 inches; the valve-seats to be of brass, and the valves of vulcanized rubber; valve-springs to be made of spring brass; the suction-chamber of the pump is to be fitted so that the suction-hose can be connected on either side of the engine, with brass caps to close the openings when desired, and two (2) discharge-gates.

- 387 Pump to have a screw relief valve  $1\frac{1}{2}$  inch opening. Metal of pump to be the same in thickness and construction as that used on Engine No. 42 of this department.

Feed-pumps.

There are to be two (2) feed-pumps for supplying the boilers with water, and to be constructed with pipes so that they can be used independently of any supply from main pump if required. Valves and chests to be constructed the same as on the regular engines of this department.

- 388 One steam-cylinder  $7\frac{1}{2}$  inches diameter and 9 inches stroke, suitably packed. Piston-head working on the same piston-rod with pump. Suitable cross between, working by crank the balance-wheel, valve-rod, and boiler feed-pump. The cylinders exhaust into the chimney through a variable exhaust-tip. Cylinder to be covered with brass, and have brass heads.

Vacuum-cham-  
bers.

- Two (2) vacuum-chambers made of copper polished, screwed upon the seat on the suction-pipe  $5\frac{1}{2}$  inches diameter, and 18 inches high.

- Air-chamber.** One (1) air-chamber to be made of copper, 31 inches high by 5½ inches diameter at neck, and 17 inches diameter at dome, and fitted with regulation-screw at top for holding signal-lantern.
- Front and hind wheels.** Wheels to be the same in construction and diameter as used by Engine No. 31, located at 116 Leonard Street.
- Axle-arms.** Axles to be made the same as on the regular engines of this department. The  
 390 arms to be the same in size.
- Brake.** Brakes arranged to bear upon the rear wheels, and so constructed as to be controlled by the driver.
- Suction-hose.** Suction-hose to be in two (2) lengths, nine feet each by four (4) inches inside measurement, and made of rubber with spiral band-iron galvanized; each length to have suitable couplins.
- Coal-bunker.** Coal-bunkers made of stout iron, to be in the same form and construction as on  
 391 the regular engines of this department.
- Driving-rig.** Driving-rig to be such as the engine may be drawn by horses, the same in construction and size as on the regular engines of this department. There is to be a driver's seat upon the forward part of the engine fitted with cushion; two hand-lanterns; whip-socket; and the engine is to be completely fitted up with a proper pole and whiffletree for the attachment of horses.
- Boiler-dome.** Boiler-dome to be of brass, the same in  
 392 style as on engines in use by this department.
- Signal-lanterns.** Signal-lanterns to be of usual size, and style like that on Engine No. 18 of this department. Side-glasses blue, with the number of company, and letters F. D. N. Y. End-glasses plain, white signal, mounted with an eagle.
- Engine to be supplied with a suitable brass strainer for large suction.
- One (1) brass hydrant connection for suction-hose.
- 393 One (1) brass steam-whistle.
- Two (2) silver-plated gauges: one (1) to indicate

pressure upon the boiler one hundred and sixty pounds, and one (1) to indicate the water pressure at the pump or leading-hose two hundred and seventy pounds.

Two (2) brass discharge-pipes for leading-hose, with a complete set of changeable nozzles from  $\frac{1}{8}$  to  $\frac{1}{4}$  inches diameter inclusive.

Fresh-water tanks. Two (2) fresh-water tanks made of brass polished, to be located over forward  
394 axle, the same in size as on Engine No. 42, and to be constructed with feed-pumps.

No. plates. Two (2) company number plates, to be placed on side of boiler.

All parts of engine-pump to be properly flanged where connected with the boiler.

All parts of apparatus to be painted the regulation color and stripes of engine used by this department, except the vacuum-chambers, air-chambers, steam-cylinder, dome, fresh-water tanks, and working parts.

395 A true copy.

D. S. SCHIERENBECK.

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[INDORSED.]

Fire-Department, city of New York. — N.Y., September 18, 1876. — Gilbert J. Orr, Chief of Battalion, in charge repair-shops. — Specification for third-class engines.

396 Copy. — In Board of Fire Commissioners. — N.Y., September 20, 1876. — Approved and filed. — Carl Jussen, Acting Secretary.

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[INDORSED.]

Paid in full March 7, 1877. — No. 3,868. — In Board of Fire Commissioners. — New York, October 25, 1876. — Submitted at opening of proposals this  
397 day. — Carl Jussen, Acting Secretary. — Headquarters Fire-Department. — New York, November 15, 1876. — In conformity with the provisions

of section 29, chapter 335, of the laws of 1873, we certify that the estimated expense of executing the within contract will approximate the sum of fifteen thousand dollars. — Joseph L. Perley, Roswell D. Hatch, Vincent C. King, Commissioners.

Finance Department. — New York, November 5, 1876.

- 398 Received and entered in the Comptroller's Office.  
— Wm. Steele, for first assistant book-keeper.  
Examined, and found correct as to amount bid.  
— H. J. Storrs.
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[INDORSED.]

- Paid in full March 7, 1877. — No. 3,868. — (C. and P.)  
— Fire-department, city of New York. — November 15, 1876. — Contract with Amoskeag Manufacturing Company of Manchester, N.H., by Charles  
399 A. Luce, agent for building and furnishing four  
(4) third-class steam fire-engines. — Examined,  
T. H.

Law Department. — New York, October 7, 1876. —  
Approved as to form. — Wm. C. Whitney, Counsel to the corporation. — 63. — October 13, 1876.  
New York.

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[INDORSED.]

- 400 Comptroller's certificate. — Dated New York, November 21, 1876. — In pursuance of the provision of section 29, chap. 335, of the laws of 1873, I hereby certify that there remains unapplied and unexpended a balance of the appropriation applicable to this contract sufficient to pay the estimated expense of executing the same; viz., \$15,000. — Andrew H. Green, comptroller.

**· In the Circuit Court of the United States,**  
**IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.**  
**SECOND CIRCUIT. IN EQUITY.**

THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK,  
*Defendants.*

We command you, that, all and singular business and excuses being laid aside, you and each of you be and appear in your proper persons before John A. Shields, an examiner appointed by the Circuit Court of the United States of America for the Southern District of New York, in the Second Circuit, at his office  
404 at the United-States Court Rooms, United-States Court and Post-Office Building, in the city of New York, in the said Southern District of New York, on the thirtieth day of October, one thousand eight hundred and seventy-eight, at half-past eleven o'clock in the forenoon of the same day, to testify all and singular what you and each of you may know in a certain cause now depending undetermined in the Circuit Court of

the United States for the Southern District of New  
 York, wherein Christopher C. Campbell is complainant,  
 405 and the Mayor, Aldermen, and Commonalty of the  
 City of New York are defendants, on the part of the  
 complainant. And this you or either of you are not  
 to omit, under the penalty upon each and every of you  
 of two hundred and fifty dollars.

**Witness,** Hon. Morrison R. Waite, Chief Jus-  
 tice of the Supreme Court of the United  
 States, at the city of New York, the twenty-  
 ninth day of October, in the year of our  
 406 Lord one thousand eight hundred and  
 seventy-eight.

[SEAL]

JOHN I. DAVENPORT,

*Clerk.*





**In the Circuit Court of the United States,**

**IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.**

**SECOND CIRCUIT.**

**IN EQUITY.**

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**CHRISTOPHER C. CAMPBELL,**  
**COMPLAINANT, AND ASSIGNEE IN TRUST,**

**VERSUS**

**THE MAYOR, ALDERMEN, AND COMMONALTY OF  
THE CITY OF NEW YORK.**

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**DIRECT OR PRIMA FACIE PROOFS AND EXHIBITS, ON THE PART  
AND IN BEHALF OF THE COMPLAINANT, TAKEN  
AT THE CITY OF NEW YORK.**

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**MARCUS P. NORTON,**  
**TROY, N.Y.,**  
**GEORGE H. WILLIAMS,**  
**WASHINGTON, D.C.,**

**AND**

**BENJAMIN F. BUTLER,**  
**BOSTON, MASS.,**  
*Of Counsel for Complainant.*



**In the Circuit Court of the United States,**

IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.

SECOND CIRCUIT.

IN EQUITY.

---

CHRISTOPHER C. CAMPBELL,  
*Complainant, and Assignee in Trust,*

*versus*

THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK,  
*Defendants.*

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To WILLIAM C. WHITNEY, ESQ.,  
*Solicitor for Defendants, New York City.*

407 SIR, — You will please take due notice, and notice is  
now and hereby given to you and to the defendants,  
that, in conformity to the terms of a verbal agreement  
by and between counsel for the above-named complain-  
ant and the above-named defendants, the complainant  
will proceed to take evidence or proofs on his part and  
behalf for final hearing, and in support and mainten-  
ance of the bill in this cause duly on file in the office  
of the clerk of this court on Wednesday, the twenty-  
fifth day of September, A.D. 1878, at eleven o'clock in  
408 the forenoon of that day, before Hon. John A. Shields,  
one of the standing examiners of this court. Such  
testimony will be so taken at the office of said John A.  
Shields, or at such other suitable place as he may desig-  
nate in said Southern District of New York. Mr.  
Shields's office is at room No. 40, third floor, in the new

Court House and Post Office building in the city of New York.

You will also please take due notice that the taking of such evidence or proofs before Mr. Shields will be  
 409 continued from day to day thereafter, and until complainant's direct testimony is taken, and his *prima facie* case is made, unless postponed by the examiner aforesaid for cause shown.

LOCKWOOD & POST,  
*Solicitors for Complainant,*  
 New York.

MARCUS P. NORTON,  
 Of Counsel, Troy, N.Y.

410 Dated New York, this twenty-third day of September, A.D. 1878.

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Pursuant to the foregoing notice, I hereby fix the twenty-fifth day of September, 1878, at 11 o'clock A.M., for the taking of testimony before me in the above entitled case, at my office in the United States Court and Post Office building, in the city of New  
 411 York, room No. 40, third floor of said building.  
 September 24, 1878.

JOHN A. SHIELDS, *Examiner.*

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[INDORSED.]

In the Circuit Court of the United States, for the Southern District of New York. — In Equity. — Christopher C. Campbell, Assignee in Trust, *vs.*  
 412 the Mayor, Aldermen, and Commonalty of the City of New York. — Notice of time and place for the taking of proofs for final hearing in this cause on the part and behalf of complainant.

LOCKWOOD & POST,  
*Solicitors for Complainant,*  
 New York.

**In the Circuit Court of the United States,**

IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.

SECOND CIRCUIT.

IN EQUITY.

CHRISTOPHER C. CAMPBELL,  
*Complainant, and Assignee in Trust,*

*versus*

THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK,  
*Defendants.*

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413    Testimony taken on the part of the complainant under and pursuant to the 67th Rule of the Supreme Court of the United States, as amended, before John A. Shields, Esq., a standing Examiner of said Court, and pursuant to notice and order hereto annexed.

NEW YORK, September 25, 1878,  
11 o'clock A.M.

*Present.* — HON. MARCUS P. NORTON and LOUIS F. POST, Esq., *of Counsel for Complainant,* and  
414        FREDERIC H. BETTS, *of Counsel for Defendants.*

Complainant's counsel offers in evidence a certified copy of the file wrapper and contents, in the matter of the letters-patent granted to James Knibbs, assignor to himself and Marcus P. Norton, dated May 24, 1864, No. 42,930, for improvements in pumps for steam fire-engines, the certificate bearing date the twenty-first day of September, 1878; signed W. H. Doolittle, Acting Commissioner, and under the seal of the United

415 States Patent Office, and the same is marked "Complainant's Exhibit A, September 25, 1878."

J. A. S., *Ex'r.*

Complainant's counsel also offers in evidence a certified copy of an assignment by James Knibbs to Marcus P. Norton, dated the twenty-seventh day of April, 1864, and recorded in the Patent Office on the ninth day of May, 1864, the certificate bearing date the twenty-first day of September, 1878; signed W. H. 416 Doolittle, Acting Commissioner, and under the seal of the Patent Office, and the same is marked "Complainant's Exhibit B, September 25, 1878."

Objected to as incompetent, and not the best evidence.

Complainant's counsel also offers in evidence a certified copy of letters-patent, granted to James Knibbs and Marcus P. Norton, dated May 24, 1864, No. 42,920, for improvements in pumps for steam fire-engines; the 417 certificate is dated the twenty-first day of September, 1878, signed W. H. Doolittle, Acting Commissioner, and is under the seal of the United States Patent Office, and is marked "Complainant's Exhibit C, September 25, 1878."

J. A. S., *Ex'r.*

Complainant's counsel also offers in evidence a certified copy of an assignment from James Knibbs to Lemuel H. Tupper, dated the twenty-third day of August, 418 1867, and recorded in the Patent Office September 30, 1867, the certificate bearing date the twenty-first day of September, 1878, signed W. H. Doolittle, Acting Commissioner, and under the seal of the Patent Office, and the same is marked "Complainant's Exhibit D, September 25, 1878."

J. A. S., *Ex'r.*

The same objection.

Complainant's counsel also offers in evidence a certified copy of an assignment by Lemuel H. Tupper to 419

James Knibbs, dated the twentieth day of July, 1874, and recorded in the Patent Office July 24, 1874, the certificate bearing date the twenty-first day of September, 1878, and signed W. H. Doolittle, Acting Commissioner, and is under the seal of the United States Patent Office, and the same is marked "Complainant's Exhibit, E, September 25, 1878."

J. A. S., *Ex'r.*

The same objection.

- 420 Complainant's counsel also offers in evidence a certified copy of an assignment by Marcus P. Norton to Helen M. Ingalls, dated 19th March, 1877, and recorded in the United States Patent Office April 12, 1877, and the certificate is dated the twenty-first day of September, 1878, and the same is signed W. H. Doolittle, Acting Commissioner, and is under the seal of the United States Patent Office, and the same is marked "Complainant's Exhibit, F, September 25, 1878. J. A. S., *Ex'r.*"

- 421 The same objection.

Complainant's counsel also offers in evidence a certified copy of an assignment by James Knibbs to Christopher C. Campbell, dated the tenth day of October, 1877, and recorded in the Patent Office October 19, 1877, the certificate being dated the twenty-first day of September, 1878, signed W. H. Doolittle, Acting Commissioner, and under the seal of the United States Patent Office, and the same is marked "Complainant's Exhibit, G, September 25, 1878. J. A. S., *Ex'r.*"

- 422 The same objection.

Complainant's counsel also offers in evidence a certified copy of an assignment by Helen M. Ingalls to Christopher C. Campbell, dated the tenth day of October, 1877, and recorded in the Patent Office October 19, 1877, the certificate being dated the twenty-first day of September, 1878, and signed W. H. Doolittle, Acting Commissioner, and under the seal of the Patent Office, and the same is marked "Complainant's Exhibit, H, September 25, 1878. J. A. S., *Ex'r.*"

- 423 The same objection.

It is hereby stipulated and agreed by and between



the counsel for the respective parties, and so entered on the record, that all the laws which have at any time been passed by the State of New York relating to the incorporation and corporate powers of the city of New York as a Municipal Corporation, and to the creation, powers, and duties of the Metropolitan Fire-Department of said city, or the fire-department of said city, or the powers, obligations, and duties of the officers or  
 424 employees thereof, shall be and are considered as duly in evidence in this cause, and may be read and referred to by either party on the hearing, from any of the regular editions of the laws of New York. The following Acts are herein specified particularly:—

The Dougan Charter of 1686 and the Montgomery Charter of 1730, which may be read, if not found in State publications, from any publications authorized by the city.

Laws of 1857, chap. 446.

425 Revised Laws of 1813, sect. lxxiv., chap. 86, at p. 367 of vol. ii.

Laws of 1865, chap. 249.

Laws of 1870, chap. 137.

Laws of 1873, chap. 335.

Dated New York, September 25, 1878.

LOCKWOOD & POST,

*Solicitors for Complainant.*

FREDERIC H. BETTS,

*Counsel for Defendants.*

426

Adjourned to Thursday, September 26, 1878, at the office of Frederic H. Betts, Esq., 20 Nassau Street, New York City, at 2.30 o'clock P.M., on that day.

At the office of Frederic H. Betts, Esq., 20 Nassau Street, New York, September 26, 1878, 2.30 P.M.

Pursuant to adjournment.

Parties met.

427 Present — Counsel as before.

Adjourned to Monday, September 30, 1878, at 10.30 A.M.

New York, September 30, 1878, at 10.30 A.M., parties met, pursuant to adjournment of Thursday.

Present— Counsel as before.

James Knibbs, a witness produced on the part of the complainant, being duly sworn, deposes and says:—

Q. 1. What is your name, age, residence, and occupation?  
428

A. James Knibbs. I am fifty-one years of age. I reside at Troy, N.Y., and I am an engineer.

Q. 2. About how long have you been engaged in the business stated by you in the last answer?

A. Between eighteen and nineteen years continuous, and all that time in the city of Troy.

Q. 3. Have you had any practical experience in the operation of steam fire-engines during the time stated in your last previous answers?

429 A. I have, sir, the whole of that time.

Q. 4. State whether you are acquainted and familiar with the construction and operation of various kinds of steam fire-engines made by different manufacturers.

A. I am: but more particularly with those of the Amoskeag Company, of Manchester, N.H., made and sold by them.

Q. 5. And for about how long a time have you been so familiar with the engines named by you in the last answer as to construction and operation?

430 A. Between eighteen and nineteen years.

Q. 6. I now hand you a model: take it and examine it, and state what that represents, if you know.

A. It represents a pump of the Amoskeag Manufacturing Company, such as they use on steam fire-engines, and also a water-passage connecting the discharge side of the pump with that of the receiving side, patented by me in 1864: the exact date I cannot give, but it was in May, 1864.

Q. 7. That patent is the patent on which this suit  
431 is brought, is it not?

A. Yes, sir.

Q. 8. State the purpose or use of the water-passage described by you in your answer to Q. 6.

A. It was to pass all surplus water that the pump was draughting or might be taking from a fire-plug, and not necessary to be used for extinguishing the fires or other purposes, back into the receiving side of the pump.

Q. 9. By what means, if any, was, or is, the excessive draught of water which you speak of, regulated, or admitted to return to the supply-chamber in the pump?

A. By a valve constructed for that purpose, and operated by hand or automatically, or by a plug-cock or otherwise, for the purpose of opening or closing the passage.

Q. 10. Explain, if you know, how it happens that there is or may be an excessive pressure or supply of water in the discharge side of the pump, — supposing that the suction is equal to the discharge capacity of four nozzles on the end of suitable hose of same number.

A. If the engine were running at a speed necessary to keep up four streams of water, and one stream should be shut off, the *extra* pressure would be thrown on the remaining three, two, or one, as the case might be.

Q. 11. Suppose the second or third discharge-nozzle should be closed, and there remaining but one discharging water upon the fire of a burning building, what would be the effect produced on the engine or hose?

A. Unless the nozzle was changed on the remaining one, or pipe, the hose would undoubtedly burst, or damage to the engine occur.

Q. 12. By what means, if any, in the model now before you, would the difficulties and dangers stated by you in your last answer be overcome or remedied?

A. By opening this valve, in case one stream was shut off, it would allow the surplus water to pass back from the discharge to the receiving side of the pump, and so on; from three, two, or one, or even if they were all shut off, the pressure on the pump would be maintained the same as if they were all discharging.

Q. 13. In the last answer you use the words “by

*opening this valve :*" what valve do you refer to by the use of those words? Give it its proper name, if it has any.

A. The proper name is a "*relief valve*;" although it is sometimes called a run-around valve, and also a churn  
436 valve.

Q. 14. State, if you know, what opening, if any, is controlled by the use of that valve.

A. The opening between the discharge and receiving side of the pump.

Q. 15. State the object or purpose of the opening referred to in your last answer, used in connection with the valve described by you.

A. It is, that any or all the water may be returned from the discharge side back into the receiving side of  
437 the pump.

Q. 16. When one or more of the discharge-hose are closed or shut off from operation: is that it?

A. Yes, sir.

Q. 17. Then, if I understand you correctly, you mean to be understood that the excessive supply of water forced into the discharge side of the pump, when one or more of the discharge-pipes are closed, is returned back into the supply part of the pump, by means of this opening and this relief valve, each of  
438 which you have described. Am I correct in that?

A. Yes, sir.

Complainant's counsel now offers in evidence the model referred to by the witness; and the same is marked "Complainant's Exhibit, J, September 30, 1878, J. A. S., Ex'r."

Q. 18. I now hand you a model, or a full-size working device: take it and examine it, and state where and of whom you obtained that, if from anybody, as well as the length of time you have had it.

439 A. It was sent to the "Arba Reade" steamer-house, in Troy, N.Y., by, I think, Gilbert J. Orr of this city, who sent it there for trial between three and four years ago; and I have had it ever since.

Objected to as immaterial.

Complainant's counsel offers the device referred to in

last answer, in evidence, and it is marked "Complainant's Exhibit, K, September 30, 1878, J. A. S., Ex'r."

The same objection.

Q. 19. State, if you know, the object or purpose or  
440 use of the device marked "Complainant's Exhibit, K, September 30, 1878, J. A. S., Ex'r."

The same objection.

A. It is intended to open and close a passage between the discharge and receiving side of a steam fire-engine pump.

Q. 20. State the substantial or material difference, if any, between the valve shown by complainant's Exhibit, K, and that contained in complainant's Exhibit, J, for the purposes stated by you in your last  
441 answer.

Objected to. 1st, Because the competency of the witness is not shown. 2d, Because the device Exhibit K is not a complete device, like Exhibit N, and does not exhibit any application of the valve, and does not indicate how it can be used for the purposes suggested in the question. 3d, Because the inquiry is immaterial and irrelevant.

A. The material difference is, that one is operated by hand, the other automatically, but both performing the  
442 same office in the pump; namely, opening and closing the passage between the discharge and receiving sides of the same.

Q. 21. May not the valve in complainant's Exhibit, K, be also operated by hand, the same as Exhibit J, to open and close the passage between the discharge and supply chambers of the force-pump used in steam fire-engines.

Objected to as leading.

A. It can, by the small hand-wheel on the top.

443 Q. 22. Then, I understand you to say that the two valves shown in complainant's Exhibits, J and K, are one and identically the same for the purpose of opening and closing the opening or passage between the supply and the discharge side of the force-pump used in steam fire-engines. Am I correct in that understanding?

Objected to as leading and incompetent.

A. You are.

Q. 23. Do you regard it as material whether that  
444 valve is operated by a spring or by hand, in the operation of opening and closing the passage between the suction and discharge chambers of a steam fire-engine force-pump?

Same objections.

A. I do not.

Q. 24. State whether you have had charge of the steam fire-engine "Arba Reade," in the city of Troy, as engineer, and, if so, for about what length of time?

A. I had charge of that engine for about eighteen  
445 years and six months, or ever since it arrived in that city. The old original engine is now on reserve duty, but we have a new one of the same name. This eighteen years and six months includes both engines.

Q. 25. State whether you have used each of those engines for the extinguishment of fires in the city of Troy; and, if you have, has it been frequent, or otherwise?

A. I have used them both, and frequently, during the time stated by me.

Q. 26. State whether either or both of those engines  
446 contain the relief valve described by you for opening and closing the passage between the supply and the discharge chambers of the water-pump used in either or both of those engines.

A. They do, both contain them.

Q. 27. Have you operated those valves during the extinguishment of a fire or fires in the city of Troy during the time stated?

A. I have operated them both for that purpose, and on both engines.

447 Q. 28. Look at complainant's Exhibit, K, and state whether you have ever seen a device of that kind upon any steam fire-engine, and, if you answer yea, state when and where it was.

A. I have, on the steam fire-engine "Arba Reade," as early as the year 1863.

Q. 29. Have you ever seen it anywhere else on a steam fire-engine?

A. I have.

Q. 30. When and where was it?

448 A. At the repair-shops of the fire department of the city of New York. It was in this month, this year.

Objected to as immaterial, because the date is since the filing of the bill.

Q. 31. On how many engines, if you remember, in the fire-department of the city of New York, did you see a device or machine like, or substantially like, complainant's Exhibit, K, now shown you, at the time stated by you in your last answer?

The same objection.

449 A. To the best of my knowledge there was three.

The same objection.

Q. 32. State whether, on that occasion, you saw a steam fire-engine and the water-pump thereof taken apart and undergoing repairs.

The same objection; and also as leading.

A. I did.

The same objection.

Q. 33. State whether you examined, on that occasion, the opening or passage connecting the supply-  
450 chamber with the discharge-chamber of the water-pump of that engine.

The same objection.

A. I did.

Q. 34. State whether you then and there discovered a pipe, passage, or opening between those two chambers used in connection with a valve, which you have denominated a relief valve, substantially the same as appears in complainant's Exhibits, J and K, now shown you, and used for the purpose of regulating or  
451 returning the excessive water caused in the discharge-chamber by means of the closing of one or more of the discharge-hose during the operation of the fire-engine.

Objected to as leading; also for the same reason as Q. 30.

A. I did.

Q. 35. Look at the valve now shown you in complainant's Exhibit, K, and state for what purpose, if you know, that valve is designed or used.

A. It is to open and close the pipe, or passage, in  
452 the partition dividing the discharge and the receiving  
side of the pump.

Q. 36. And you found valves of that description  
used for that purpose in the engines which you say you  
saw and examined in the repair-shops of the fire-engine  
department of the city of New York? Did you, or did  
you not?

The same objection.

A. I did.

Q. 37. Who were with you on that occasion, if you  
453 remember?

A. Mr. Norton and Mr. Kittle.

Q. 38. Was not also Mr. Riley, the foreman of that  
department, present on that occasion, and, if not, did  
you ever see him in that shop when you were there  
examining those engines?

A. I don't think that Mr. Riley was there the first  
day that I went there, to my knowledge. He was there  
the second day.

Q. 39. With the exception of the automatic-spring  
454 device on complainant's Exhibit, K, now shown you, is  
there any doubt in your mind with reference to the  
substantial identity and the material and substantial  
use of the valve in that exhibit and the relief valve  
described by you as being contained in complainant's  
Exhibit, J, now shown you?

The same objection as to Q. 20 and Q. 30, and also  
objected to as leading.

A. There is none.

Complainant's counsel offers again in evidence the  
455 device shown by Exhibit K, heretofore marked by the  
Examiner as "Complainant's Exhibit, K, J. A. S., Ex'r,  
September 30, 1878," and the same is marked "Com-  
plainant's Exhibit, K, No. 2, J. A. S., Ex'r, September  
30, 1878."

The same objections.

*Cross-examined.*

× Q. 40. Do you consider yourself an expert in  
the matter of relief valves for steam fire-engines?

Objected to by complainant's counsel because the



456 witness on the stand has not been examined as a theoretical expert, but simply as an inventor of the invention in question, and as one *particularly* familiar with that invention for the past nineteen years or more.

A. I do not consider myself an expert.

× Q. 41. Do you consider that you have any great amount of practical familiarity with them?

A. No, sir.

× Q. 42. Did you ever practically use any relief valve, except the one patented by you in 1864?

457 A. I did, sir; an automatic valve made in 1863.

× Q. 43. Made by whom?

A. It was made by myself, or under my supervision.

× Q. 44. Do you not consider that valve included under your patent of 1864?

A. I claim no valve of itself as part of my patent. I claim the opening connecting the discharge side with the receiving side of the pump, whether opened or closed by a valve, plug, cock, or other contrivance.

458 × Q. 45. Have you ever practically used any device for opening the connection between the discharge and the receiving side of the pump, except such as you have made, or had made yourself?

A. Only such as had been sent there on trial.

× Q. 46. Sent where?

A. Sent to Troy, or the "Arba Reade" steamer.

× Q. 47. How many relief valves for steam fire-engines have you ever made, or had made for you?

A. Only one that I ever used on an engine. I  
459 have got one under way now not completed.

× Q. 48. For what engine was this one made?

A. The old "Arba Reade" steamer of Troy, N.Y.

× Q. 49. Is that valve here present now?

A. It is, sir.

× Q. 50. Please point it out.

A. This is the one I hold in my hand.

Defendant's counsel offers it in evidence; and it is marked "Defendant's Exhibit, Knibbs's valve, J. A. S., Ex'r."

460 × Q. 51. That valve Exhibit, Knibbs's valve, is

the only valve you ever made and used on an engine, is it?

Complainant's counsel object, on the ground that it is not a legitimate cross-examination of witness, no question on the direct examination having been put to the witness as touching that particular device.

2d, Because the defendant's counsel having offered that valve as evidence, he has no right to cross-examine this witness or any other witness about it.

461 3d, It is the evidence of the defendants, and by them introduced as their evidence during the cross-examination of this witness. The inquiry is therefore improper; and it is further objected, unless the defendant's counsel makes the witness his own witness.

A. It is, to the best of my knowledge, with the exception of one I am experimenting on.

× Q. 52. The one that you say you are experimenting on is not yet completed, as I understand?

Complainant's counsel takes the same objection to  
462 this question that he did to the last.

A. It is not.

× Q. 53. You say you made this valve, Exhibit Knibbs, for the old "Arba Reade" engine: whose build of engine was the "Arba Reade"?

A. She was built by the Amoskeag Manufacturing Company of Manchester, N.H., and delivered in Troy, early part of the year 1860.

× Q. 54. You say, in answer to the 28th question, that you saw a device like Exhibit K on the steam fire-  
463 engine "Arba Reade" as early as the year 1863. Did you refer to this same valve, Exhibit Knibbs, in your answer to that question?

A. I refer to the spring contained in both.

× Q. 55. Do you mean that the valve that you had on the steam fire-engine in 1863, and the valve in the Exhibit K, both have springs, and in that respect are the same kind?

A. In that respect they are both similar.

× Q. 56. In other respects they are different. Are  
464 they not?

A. In outward appearances they are.

× Q. 57. And also in interior construction, are they not?

A. I do not so consider them.

× Q. 58. Is the Exhibit Knibbs valve the same valve that you referred to in your answer to question 28, when you said that you had a valve of the kind of Exhibit K, on "The Arba Reade," as early as the year 1868?

465 A. It is.

× Q. 59. When you first put the valve upon "The Arba Reade," did it have the spring upon it as it now appears, so as to make it work automatically?

A. It did not have a spring.

× Q. 60. When did you first put this valve on "The Arba Reade"?

Objected to by complainant's counsel, as going into matter not introduced on the direct examination of this witness; and it is further objected to, unless defend-  
466 ant's counsel shall make the witness his own witness on the subject-matter of the inquiry.

2d, It being matter now for the first time introduced during the examination of this witness, it is improper and incompetent; it being matter for rebuttal on the part of the complainant in case it should become necessary on the question of prior invention.

To which the defendant's counsel does not assent.

A. Do you mean this valve? the one I hold in my hand?

467 × Q. 61. I mean that valve in the form in which you first applied it.

All the objections last above taken are here repeated as objections to this question.

A. The form which I first applied was in 1860.

× Q. 62. What was its form then?

The same objections as were taken to the last question are taken here as objections to this.

A. The form of the valve, then, was nothing more than what is commonly called a globe valve,—size  
468 about one inch.

× Q. 63. Where was it applied in this engine, "The Arba Reade"?

Last objections are here repeated as objections to this question.

A. On the outside, and connected with a crooked pipe, connecting the two sides of the pump together. The size of the pipe corresponded with that of the valve, — inside measurement.

× Q. 64. What time in 1860 did you apply this  
469 valve in this way to the steamer "Arba Reade"?

The same objections as last above are here taken as objections to this question.

A. I believe it was April or May.

× Q. 65. How came you to apply this valve, and make the connection between the discharge and receiving sides of the engine?

The same objections as last above are here taken as objections to this question.

A. When the "Arba Reade" steamer first came to  
470 Troy, it had no contrivance of that description on it; and, in working at a fire one night, it became necessary to open one of the discharge-gates and allow the surplus water to flow on the street, thereby damaging some property that night: I immediately thought of this idea and applied it, as already stated.

× Q. 66. When and where was this fire that you speak of?

The same objections as last above are here taken as objections to this question.

471 A. It was in the alley bounded by Fifth, Sixth, State, and Congress Streets, in Troy, N.Y.

× Q. 67. When?

The same objections as last above are here taken as objections to this question.

A. About the 20th of April, 1860.

× Q. 68. How long after that fire was it that you first got up this valve?

The same objections as last above are here taken as objections to this question.

472 A. Within two or three weeks: I can't tell the exact day.

× Q. 69. Have you got any record of it?

The same objections as last above are here taken as objections to this question.

A. Yes, sir.

× Q. 70. Where?

The same objections as last above are here taken as objections to this question.

A. In a book of records kept at the engine-house,  
473 accessible to any one who wishes to see them.

× Q. 71. Do you mean that the putting of this valve on "The Arba Reade" is entered in the official record of transactions of the "Arba Reade" engine company, in Troy?

The same objections as last above are here taken as objections to this question.

A. I do.

× Q. 72. How long did that valve remain on the "Arba Reade" engine in the same form that you first  
474 put it on?

The same objections as last above are here taken as objections to this question.

A. I believe till about 1863.

× Q. 73. Was you engineer of "The Arba Reade" during all that time, and ever since?

The same objections as last above are here taken as objections to this question.

A. Yes, sir; of the old one until 1875 or 1876, and the new one since.

475 × Q. 74. When first did you have an opportunity to practically use this valve and its connections as you applied it to "The Arba Reade," about May, 1860, as you say?

The same objections as last above are here taken as objections to this question.

A. We tried it at a trial the next day after it was put on the first time: I believe it was the next day.

× Q. 75. Where was this trial?

The same objections as last above are here taken as  
476 objections to this question.

A. I believe it took place at the corner of State and Third Streets, Troy.

× Q. 76. Was it described in the newspapers of the day?

The same objections as last above are here taken as objections to this question.

A. I believe not, to the best of my recollection, because the trial was not satisfactory.

× Q. 77. Did not the device work practically or  
477 successfully?

The same objections as last above are here taken as objections to this question.

A. Not wholly so.

× Q. 78. Why not?

The same objections as last above are here taken as objections to this question.

A. I cannot tell, unless it was by reason of the pipe being too small to admit the free circulation of the water in the pump.

478 × Q. 79. Did you do any thing to remedy this defect? and, if so, what?

The same objections as last above are here taken as objections to this question.

A. We did, about a year and a half after that, from that to two years, put on a larger pipe and valve, making the pipe with as few angles as possible; after doing that it worked satisfactory.

× Q. 80. State the year and month when you made this change, which made the contrivance work  
479 satisfactory.

The same objections as last above are here taken as objections to this question.

A. February the 12th, 1863; February the 13th, 1863, the trial of the above took place.

× Q. 81. How do you know those dates?

The same objections as last above are here taken as objections to this question.

A. I know them from memory, also by the daily record above referred to.

480 × Q. 82. Before answering the 80th question, did you refresh your recollection by examining a paper?

The same objections as last above are here taken as objections to this question; and, further, counsel for defendant has no right to cross-examine his own witness.

A. I did, for the reason that counsel asked for exact days and dates.

× Q. 83. Please show me the paper.

The same objections as last above are here taken as  
481 objections to this question.

A. I will, at a proper time : the reason I decline to do so now is simply because I have other dates there of certain matters that I don't wish to disclose at the present time.

× Q. 84. What other dates have you ?

The same objections as last above are here taken as objections to this question.

A. I decline to answer at the present time.

× Q. 85. Can you, from this paper, give the exact  
482 date when your circulating valve was first applied to "The Arba Reade" ?

The same objections as last above are here taken as objections to this question ; and further objected, as the witness has already stated that the matter inquired about is on record at the "Arba Reade" steam engine-house in the city of Troy ; that record is the highest and best evidence ; the inquiry is, therefore, improper.

A. I can.

× Q. 85½. When was it ?

483 The same objections as last above are here taken as objections to this question.

A. April 30, 1860, when the trial was made.

Adjourned Mr. Knibbs's examination to October 18, 1878, at 11 o'clock A.M., and adjourned to Tuesday, October 1, 1878, at 11 A.M., for the examination of other witnesses.

**Complainant's Exhibit, L.**

OCTOBER 1, 1878. J. A. S., Ex'r.

THE PRESIDENT OF THE UNITED STATES OF AMERICA,  
to JAMES RILEY, *Greeting.*

484 We command you, that, all and singular business and  
excuses being laid aside, you be and appear in your  
proper person before John A. Shields, an Examiner  
appointed by the Circuit Court of the United States of  
America for the Southern District of New York, in the  
Second Circuit, at the office of F. H. Betts, 20 Nassau  
Street, in the city of New York, in the said Southern  
District of New York, on the first day of October, one  
thousand eight hundred and seventy-eight, at ten  
o'clock in the forenoon of the same day, to testify all  
485 and singular what you may know in a certain cause,  
now pending undetermined in the Circuit Court of the  
United States, for the Southern District of New York,  
wherein C. C. Campbell is complainant, and the Mayor,  
&c., of the city of New York, are defendants, on the  
part of the complainant. And this you are not to  
omit, under the penalty upon you of two hundred and  
fifty dollars.

**Witness,** Hon. Morrison R. Waite, Chief Justice of  
the Supreme Court of the United States, at the city of  
486 New York, the thirtieth day of September, in the year  
of our Lord one thousand eight hundred and seventy-  
eight.

JOHN I. DAVENPORT,  
*Clerk.*

NEW YORK, Tuesday, Oct. 1, 1878.  
11 o'clock A.M.

Pursuant to adjournment.

487 Present — Counsel as before.

James Riley, a witness produced on the part of the  
complainant, being duly sworn, deposes and says: —

Q. 1. What is your name, age, residence, and occu-  
pation?



A. James Riley; I am forty-three years of age; I reside at 197 West Eleventh Street, N.Y., and I am a machinist; I am foreman of the machine-shop of the fire-department of this city, — commonly called the repair-shop.

Q. 2. How long have you been foreman in the fire-department referred to in your last answer?

A. One year.

Q. 3. Are you now in the employ of the city of New York?

A. I am.

Q. 4. How long have you been in the employ of the city of New York, in the fire-department?

A. Three years.

489 Q. 5. Please state where the workshops or repair-shops of the fire-department of the city of New York are located?

A. At 130 and 132 West Third Street, formerly Amity Street.

Q. 6. Are you personally acquainted with Gilbert J. Orr of this city?

A. I am.

Q. 7. About how long have you known him personally?

490 A. Three years.

Q. 8. State whether he is in the employ of the city of New York, in the fire-department.

A. He is.

Q. 9. What length of time, to your knowledge, or otherwise?

A. Since the organization in 1865, — that will be thirteen years. I now have reference to the organization of the pay department.

491 Q. 10. If you know, you may state in what capacity he is so employed by the city.

A. He is a chief of battalion; an officer of the uniform force at present detailed as superintendent of the repair-shops.

Q. 11. Look at complainant's Exhibit, K, of September 30, 1878, and also marked "Complainant's Exhibit, K, No. 2," of the same date, now shown you;

take it, examine it, and, if you know, state what that instrument or mechanism represents.

Objected to as immaterial.

492 A. It is known to me as "Orr's Empire Relief Valve."

Q. 12. Are you familiar with the construction and operation of that device, or instrument, referred to by you in your last answer, and marked as stated in the last question?

The same objection.

A. I am.

Q. 12½. State, if you know, whether the city of New York, in the fire-department of that city, now  
493 have in use upon their steam fire-engines a device, or piece of mechanism, like, or substantially like, the one now before you, and marked "Complainant's Exhibit, K," and "Complainant's Exhibit, K, No. 2, September 30, 1878."

The same objection.

A. They have.

Q. 13. And upon how many of the steam fire-engines, owned and operated by the city of New York in its fire-department?

494 The same objection.

A. About forty-five, more or less, that have that device in use and operation on its steam fire-engines.

Q. 14. For about what length of time has that device or mechanism been in use by the city of New York in its fire-department, and upon its steam fire-engines?

The same objection as before.

A. Three years, to my knowledge.

Q. 15. I call your attention to words engraved or  
495 impressed upon one part of this device, or mechanism, marked "Complainant's Exhibit, K," and "Complainant's Exhibit, K, No. 2, September 30, 1878," and I request you to read those words in the answer that you give to this question, and state the meaning of the words "relief valve" found thereon.

The same objection.

A. "Orr's Empire Relief Valve." The relief valve

is to relieve the pressure upon the hose while working at a fire, and still allow the engine to keep at work.

496 Q. 16. What do you mean to be understood by pressure upon the hose? I mean how and by what means that pressure is caused or brought about which requires to be relieved by that "relief valve" now before you?

The same objection.

A. The pressure is brought about by a controlling nozzle in the hands of the pipe-man, shutting off the flow of water at will, without notifying the engineer to stop his engine.

497 Q. 17. Then, I understand you to say that the pressure is caused in the discharge-chamber of the pump by stopping the flow of water through one, or two, or more of the hose attached to the discharge-chamber: am I correct in this understanding?

A. Yes.

Q. 18. When the water is prevented from being forced through the discharge-chamber of the pump by means of stopping the flow of water through the hose attached to it, or otherwise, how, and by what means, 498 if you know, is that water-pressure relieved so as to prevent the bursting of hose or other injury to the operating steam fire-engine?

A. By returning the water again into the suction-chamber.

Q. 19. How and by what means is that accomplished in the steam fire-engines now in use in the fire-department of the city of New York?

A. The means employed is this relief valve, having a seat or valve opening in the partition between the 499 suction and discharge chambers of the pump.

Q. 20. In your last answer you have spoken of an opening between the supply and the discharge chambers of the pump: you may state about the size of that opening or passage between those two chambers.

A. About an inch and three-eighths.

Q. 21. In your answer to Q. 19, you have spoken of a "valve-seat:" state where that valve-seat is located with reference to the passage or opening between the supply and discharge chambers of the pump.

500 A. At the end of the opening, at the pressure side of the partition dividing the two chambers.

Q. 22. State whether or not the "relief valve" sets over and against the immediate end of the opening or passageway between the suction and discharge chambers of the pump.

Objected to as leading.

A. It does when closed.

Q. 23. Then, when you want to admit or return the excessive draught of water in the discharge-chamber  
501 caused by stopping the flow of water through the hose, this "relief valve" is opened by some means: is it not so as to allow the pressure-water to be returned into the supply-chamber?

The same objection.

A. It is.

Q. 24. For the purposes stated in your last answer, does it make any difference other than that of convenience, whether that "relief valve" is opened by the hand operating the stem by means of the little wheel  
502 at one end of it, and the "relief valve" at the other end, as shown in complainant's Exhibit about which you have been testifying, or whether it is done by means of a spring that appears upon the inside of said Exhibit?

The same objection.

A. No: the result is the same.

Q. 25. State how and by what means complainant's Exhibit, K and K, No. 2, is applied to a pump in steam fire-engines, so as to make it operative for the  
503 use and purposes you have stated.

Objected to as immaterial.

A. It is screwed into the body of the pump from the outside.

Q. 26. And that would, or would it not, permit the "relief valve" to come in contact with and against the end of the opening or passage between the supply and discharge chambers of the pump?

Objected to as leading.

A. It would.

504 Q. 27. This "relief valve," then, if I understand

you correctly, is for the purpose of opening and closing the passageway or opening between the supply and discharge chambers of the pump, whenever necessary to do so in consequence of the excessive pressure of water in the discharge-chamber caused by stopping the flow of water through one or more of the hose discharging water for the extinguishment of the fire, or other purposes in the use of steam fire-engines. Am I correct in this understanding?

505 The same objection.

A. Yes.

Q. 28. When the valve is lifted off the passage so as to allow the excessive pressure of water to pass from the discharge-chamber to the suction or supply chamber of the pump, does, or does not, that valve in all cases have to be lifted against this excessive pressure of water?

A. The back of the valve is lifted against the pressure of water. That would occur in every case of construction of that kind of valve.  
506

Q. 29. If the pressure is against the back of the valve, that pressure acts upon the whole valve, does it not?

Objected to as leading.

A. Yes.

Q. 30. You state that you have known of this "relief valve" now before you as complainant's Exhibit, K, and complainant's Exhibit, K, No. 2, of September 30, 1878, being in use on steam fire-engines  
507 in the fire-department of the city of New York, for at least during the last past three years, and upon about forty-five such engines: if you know, please state whether it was used in connection with the opening, passageway, or conduit, connecting the supply chamber and the discharge chamber or chambers of the water or force pump on those engines.

A. It was.

Q. 31. State, if you know, whether the invention or improvement which you have thus far described and  
508 referred to by complainant's Exhibits, K and K, No. 2, is of value and of mechanical importance in the use

and operation of steam fire-engines containing it, and that have been used as stated by you in the fire-department of the city of New York. I mean the "relief valve" and the water-passage connecting the two chambers described by you.

A. It is of value as a preventative against bursting of hose, and, further, as a preventative of damage to buildings and goods or merchandise by excessive use of  
509 water in the extinguishment of fires.

Q. 32. Is there any substantial or material difference between-suction chamber and supply-chamber in steam fire-engine pumps used in the fire-department of the city of New York?

A. No.

Q. 33. Then I understand you to mean that the suction-chamber and supply-chamber are one and the same chamber, as distinguished from the discharge or pressure chamber of the water or force pump used in  
510 those engines: am I correct in that, differing only in name?

Objected to as leading.

A. They are, and you are correct.

Q. 34. State whether you have been subpoenaed on the part and behalf of the complainant, and your regular fees paid you to appear here to-day and submit yourself to an examination under that subpoena.

A. I have.

Q. 35. If you have the copy of the subpoena served  
511 on you to-day with you, and you have no objections, I wish you to produce it here, that it may be filed as an exhibit in this case.

A. Witness produces it, and it is marked "Complainant's Exhibit, L, J. A. S., Ex'r. Oct. 11, 1878," and is a part of his answer.

*Cross-examination.*

× Q. 36. Exhibit K, to which you have referred, is an automatic relief valve, is it not?

512 A. It is.

× Q. 37. Is there not a great advantage in using an automatic relief valve over a relief valve that works merely by hand?

A. There certainly is.

Complainant's counsel objects to both question and answer, on the ground that the matter inquired about has no reference to the subject-matter involved in this suit; and,

2d, Because it is a new matter here for the first  
513 time introduced, and, being on cross-examination, it is improper and incompetent.

× Q. 38. Is the relief valve, Exhibit K, a patented contrivance? and, if so, when was it patented and by whom?

A. I understand it to be so, and patented by Gilbert J. Orr, on May 19, 1874.

× Q. 39. With a relief valve which is not automatic, but was worked by hand only, would it be possible for the pipe-man to shut off the flow of water at  
514 will while the engine was running, without notifying the engineer, either to stop his engine or open up the valve?

Objected to as immaterial, improper, and incompetent, on this cross-examination.

It is possible, — yes, he could shut it off.

× Q. 40. I mean, is it possible to do so without bursting the hose or injuring the engine?

A. The probabilities are that one or other of these results would occur, or the engine would stop.

515 × Q. 41. Are the engines of the fire-department of the city of New York used with more than one line of hose at a time?

A. Frequently.

× Q. 42. Are the fire-engines and valves the property of the fire-department, and under its sole control?

Objected to as immaterial, incompetent, and improper, on the cross-examination of this witness.

A. I understand them to be the property of the city.

516 × Q. 43. Do you know about that?

The same objections, with the further objection that the counsel for the defendant having assumed, by the putting of his last question but this, that the witness did know about the matter inquired about, it is hardly

fair at this time to attempt to bulldoze the witness by this inquiry.

And, 2d, that the last answer of the witness shows that he does know about it and has fully answered with reference to the matter.

517 A. Nothing further.

*Re-direct Examination.*

R. D. 44. Cross-question No. 40 reads: "I mean, is it possible to do so without bursting the hose or injuring the engine?" Your answer was: "The probabilities are that one or other of these results would occur, or the engine would stop." Suppose there were no automatic device attached to the "relief valve," so that it could work automatically, and suppose the "relief  
518 valve" to be in condition only to be worked by hand at the engine, and then suppose the pipe-man to suddenly check or stop the flow of water through the hose by closing the nozzle, would not the engineer be instantly advised or informed of that fact by the pressure of water in the hose, as well as by the pressure of water in the discharge-chamber of the force-pump, thereby checking more or less the speed of the engine?

A. The action would be noticed by the engineer in the increased labor of his engine, if the hose stood the  
519 test.

R. D. 45. What do you wish the court to understand by the term "pipe-man," which has been frequently used during your examination to-day?

A. The man who has charge of the pipe, or nozzle, at the end of the hose where the water is discharged upon the fire of a burning building.

JAMES RILEY.

Subscribed and sworn to before me this October 1,  
520 1878.

JOHN A. SHIELDS,  
*Examiner, &c.*

Adjourned to Wednesday, October 2, 1878, at 11 o'clock A.M.



**Complainant's Exhibit, M.**

OCTOBER 2, 1878. J. A. S., Ex'r.

THE PRESIDENT OF THE UNITED STATES OF AMERICA,  
to GILBERT J. ORR, *Greeting.*

- 521 We command you, that, all and singular business and  
excuses being laid aside, you be and appear in your  
proper person before John A. Shields, an Examiner  
appointed by the Circuit Court of the United States of  
America for the Southern District of New York, in the  
Second Circuit, at the office of F. H. Betts, Esq., No.  
20 Nassau Street, in the city of New York, in the said  
Southern District of New York, on the second day of  
October, one thousand eight hundred and seventy-  
eight, at eleven o'clock in the forenoon of the same  
522 day, to testify all and singular what you may know in  
a certain cause now pending undetermined in the  
Circuit Court of the United States, for the Southern  
District of New York, wherein C. C. Campbell is com-  
plainant, and the Mayor, &c., of the city of New York  
are defendants, on the part of the complainant.

And this you are not to omit, under the penalty  
upon you of two hundred and fifty dollars.

- Witness,** Hon. Morrison R. Waite, Chief Justice of  
the Supreme Court of the United States, at the city  
523 of New York, the first day of October, in the year of our  
Lord one thousand eight hundred and seventy-eight.

JOHN I. DAVENPORT,  
*Clerk.*

Signed by GILBERT J. ORR.

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NEW YORK, October 2, 1878,  
11 o'clock A.M.

- 524 Pursuant to adjournment. -  
Present— Counsel as before.

Gilbert J. Orr, a witness produced on the part of the  
complainant, being duly sworn, deposes and says:—

Q. 1. What is your name, age, residence, and occupation?

A. Gilbert J. Orr; I am forty-four years of age; I reside at 28 Greenwich Avenue, New York; and I am a chief of battalion of the fire-department, in charge of the repair-shops of the city of New York.

525 Q. 2. If you have no objections, you may state generally what your duties are in the position or official capacity stated in your last answer.

A. My position is constructor and repairer of apparatus belonging to the fire-department.

Q. 3. Belonging to what fire-department?

A. The fire-department of the city of New York.

Q. 4. About how long have you been employed in the position stated by you, in the fire-department of the city of New York?

526 A. Since the twenty-second day of May, 1873.

Q. 5. Previous to 22d May, 1873, were you in the employment at any time of the fire-department of the city of New York?

A. Yes, sir: I was appointed in the fire-department September 6, 1865, and have remained in their employ up to the present time.

Q. 6. Continuously?

A. Continuously.

527 Q. 7. State, if you know, whose manufacture of steam fire-engines is now in use in the fire-department of the city of New York.

A. The Amoskeag Manufacturing Company of Manchester, N.H., with a few exceptions.

Q. 8. About how many and whose make are those excluded by you in your last answer?

A. There are about three engines built by James Smith of the city of New York, and one of the Gould Manufacturing Company of Newark, N.J.

528 Q. 9. If you know, you may state how many steam fire-engines of all kinds of manufacture are now owned by the city of New York, and used in its fire-department.

Objected to, because it does not appear that any engines are owned by the city of New York; the testi-

mony of the witness being they belong to the fire-department.

A. About fifty engines.

Q. 10. If you know, you may state whose property those engines are.

529 A. That I am unable to answer.

Q. 10½. Why?

A. Because, as far as my knowledge goes, they are used in the fire-department of the city of New York.

Q. 11. Used by whom, and for what purpose?

A. Used by the fire-department of the city of New York, in the extinguishment of fires.

Q. 12. In the extinguishment of fires in public or private buildings, and also steamboats or other burning property in the city of New York?

580 A. Yes, sir: they are used for the extinguishment of fires in public or private property, both on land and on the rivers, and within the jurisdiction of the city of New York; the department makes no distinction, however, between private and public property.

Q. 13. If you know, state who pays the expense of doing the thing stated by you in your last answer.

A. As far as I know, the commissioners.

Q. 14. What commissioners? and, if you please, state their names if you know.

581 A. The commissioners of the fire-department of the city of New York; namely, Vincent C. King, Joseph L. Perley, John J. Gorman.

Q. 15. If you know, you may state by whom those commissioners are appointed, and under whose authority they act.

Objected to as matter of law.

A. I believe they are appointed by the Mayor, and confirmed by the Common Council of the city of New York; but under whose authority they act, I don't  
582 know.

Q. 16. If you know, you may state of whom those commissioners receive or obtain money to carry on the business of the fire-department of the city of New York.

The same objection.

A. That I don't know from my own personal knowledge: I believe from the comptroller of the city of New York.

533 Q. 17. State whether you are familiar with the construction and operation of the various kinds of steam fire-engines you have named or referred to during your examination this morning.

A. I am, sir.

Q. 18. If you know, you may state when the first steam fire-engine of the Amoskeag Company manufacture was put into use in the fire-department of the city of New York.

534 A. I think the first Amoskeag Company steam fire-engine was used in the volunteer fire-department of the city of New York, by Engine No. 5, in the year 1859 or 1860: I am not positive as to dates, but it was one of those years.

Q. 19. In your last answer you speak of that "*engine being No. 5:*" was that the manufacturers' number, or was it the number of engines then in use in the fire-department of the city of New York?

A. No, sir: it was the number of the company.

Q. 20. Do you remember the manufacturers' number of that engine?

535 A. No, sir.

Q. 21. State, if you know, the time, or about the time, when the next steam fire-engine of the Amoskeag Company manufacture was put into use in the fire-department of the city of New York.

A. I am unable to do so.

536 Q. 22. I now hand to you a device, or piece of mechanism, marked "Complainant's Exhibits, K and K, No. 2, September 30, 1878;" take it, examine it, and then state what it represents, if you know, describing the various parts thereof, their uses and purpose, and the operation of the same.

A. This exhibit represents an automatic relief valve, of which I hold letters-patent for, dated May 19, 1874, and which I claim as my invention; the same is applied to the water-pump of the steam fire-engines; the device is constructed with a spring, so that it can

be adjusted to different pressures; the device is located on the discharge side of the pump, with a valve opening into a passage that communicates with the suction-chamber; its workings are, that, when the valve is raised off the seat, it allows the water on the discharge side to flow back into the passage leading into the suction or supply chamber.

Q. 23. What part of that device about which you speak in your last answer did you invent and secure by letters-patent of the date you named?

A. The automatic portion, and only that.

Q. 24. I observe upon this exhibit about which you are testifying, the following words: "Orr's Empire Relief Valve." State, if you know, what is meant by those terms "relief valve."

A. It is a valve that is worked at any given pressure that it may be set at for the purpose of taking off the excessive strain from the hose or the pump in the pressure-chamber on the discharge side of the pump.

Q. 25. Explain how or by what means the excessive pressure on the hose and in the discharge-chamber of the pump is caused, which requires the "relief valve" to relieve that excessive pressure.

A. By closing the nozzle or nozzles, and stopping the flow of water through the hose, it would increase in pressure, if not relieved by a valve of this description: I mean a valve either worked automatically, or by the hand.

Q. 26. You may state, if you know, whether in the steam fire-engines now in use in the fire-department of this city, there is an opening, or passageway, for water to flow through, between the suction or supply chamber and the discharge or pressure chamber of the water force pump used on those engines.

A. There is on all those engines.

Q. 27. Please state the diameter of that opening, or water-passage, between those chambers.

A. They range in sizes from an inch three-eighths to an inch seven-eighths.

Q. 28. Please state why those water-openings, or passageways, between those chambers vary in the sizes stated by you in your last answer as to diameter.

A. I know of no reason why they vary; as they  
541 came that way from the manufacturer, and the valves  
were made to correspond with the openings.

Q. 29. Is there any difference in the capacity of  
the hose or of the water force-pump, some of which  
have water passageway of the small diameter, which  
you have stated, while others have it of a larger diame-  
ter, as you have stated, or, in other words, have all the  
engines the same number and the same size of hose for  
the discharge of water upon a fire, and are the water-  
pumps of the same capacity for drawing or supplying  
542 or discharging water upon a burning building?

A. The main water-pumps vary in size, ranging  
from four and an eighth to four and seven-eighths in  
their plungers. The largest size pump has a small  
valve, and the largest valves are on pump-plungers four  
and a quarter inches in diameter. The hose are all of  
the same size throughout the department, which is two  
and a half inches inside diameter. In working at a fire  
the amount of hose varies,—sometimes one line and  
sometimes two: each company carries seven hundred  
543 and fifty feet of hose on the tender.

Q. 30. How many streams of water from only one  
engine may be thrown at one time upon a burning  
building or other burning property by the steam fire-  
engines now in use in the fire-department of the city of  
New York?

A. The number that can be used is from two to  
four streams.

Q. 31. You have spoken of and described an open-  
ing, or water-passage, between the supply-chamber and  
544 the force or discharge chamber of a water-pump used  
in a steam fire-engine, and also spoken of and described  
a "relief valve"; state, if you know, whether that  
"relief valve" is used in connection with the water-  
passage, or opening, and, in all cases, on the engines  
you have named to-day.

A. It is.

Q. 32. State, if you know, whether the "relief  
valve" you have described comes in contact with one  
end of the opening, or water-passage, described by you,

545 having there a valve-seat, which you have also described, so that the valve may be lifted from or closed against its seat, at the end of that water passageway, so as to allow the escape or passage of the excessive draught of water that may be contained in the force or discharge side of the water-pump, and thus relieve the hose and pump from excessive pressure, also described by you.

A. Yes, sir.

Q. 33. Does it, or does it not, make any material or 546 substantial difference whether that "relief valve" is opened from the valve-seat, so as to relieve the excessive pressure at the end of that opening, or water passageway, between the supply and the discharge chambers of the water force-pump, by means of the automatic device, for which you say you have a patent, or by hand, by the turning of the little wheel found at the end of the stem containing the "relief valve," as the same appears in complainant's Exhibit, K, and Exhibit K, No. 2, now before you?

547 A. By the opening of the valve, as far as the flow of water is concerned, whether automatic or not, the current and the relief is the same; but the object of the automatic "relief valve" is to enable the man at the pipe to control the water by shutting it off at the nozzle without the aid of the engineer, leaving the engine running all the time; but, in the application of the hand-screw relief, word has to be sent from the burning building to the engineer of the steamer to stop the engine.

548 Q. 34. In the case of the use of the hand relief valve, of which you speak, and, supposing the pipe-man close the nozzle of one or more of the same so as to stop the flow of water through the hose, would not there be an excessive pressure caused by the sudden stoppage of water at the nozzle contained in the hose, and also in the discharge-chamber to which the hose are attached? and would not that fact be known by the engineer operating the steam fire-engine? and, if so, how would he be able to know that fact?

549 A. By the pipe-man closing the nozzle there would

be an excessive pressure, which would be an indication to the engineer by the increased pressure on his gauge, or bursting of the hose, or stopping the engine.

Q. 35. The pressure indicated upon the gauge at the engine would indicate to the engineer operating the engine that there was an excessive pressure in the discharge-hose, or in the discharge or force chamber of the water-pump; would, or would it not?

A. It would.

550 Q. 36. Seeing that pressure to be an accomplished fact, would or would it not be the duty of the engineer to open the "relief valve" so as to allow the excessive pressure contained in the hose or discharging-chamber of the pump to be eased or relieved by the passage of the water under high and excessive pressure back or through the opening, or water passageway, between the discharge-chamber and the supply-chamber of the water force-pump?

A. I should consider it would be the duty of the  
551 engineer to relieve the hose or pump from excessive pressure by opening the hand relief valve when not provided with a device automatic for opening the relief valve.

Q. 37. Suppose the "relief valve," to be operated by hand so as to open and close the opening, or water passageway, between the pressure or discharge chamber and the suction or supply chamber of the water-pump of the engine, had no automatic device attached to it for the purposes of opening and closing it, — would  
552 or would it not be of great value in the practical use of a steam fire-engine?

A. It would, provided that the engineer would be quick enough in his movements to regulate the opening and closing of the valve.

Q. 38. Is, or is not, the "relief valve," when used in connection with the opening, or water passageway, between the pressure and supply chambers of a water-pump, of great value in the practical use and operation of a steam fire-engine?

553 A. Yes: it is.

Q. 39. Is a steam fire-engine of much practical use



or valve when it does not contain the "relief valve" and water passageway used in connection with each other, substantially as you have described them during this examination?

A. Yes, sir: it is more complete by having the "relief valve."

Q. 40. When, if you know, was the "relief valve," and its connections described by you, first put into use  
554 in the fire-department of the city of New York?

A. About the latter part of 1865.

Q. 41. Was that an automatic "relief valve"?

A. No, sir: it was a hand-screw valve, operated solely by hand.

Q. 42. Was it, or was it not, substantially like the hand-screw valve contained in complainant's Exhibit, J, September 30, 1878, which I now hand you, and request you to examine, and then to make your answer?

555 A. The valve and spindle were exactly the same, but differently located in the pump.

Q. 43. Was not also the valve-seat the same at the end of the water passageway as it now appears in complainant's Exhibit, J, which you have before you?

A. The valve-seat is the same, and is located in the partition dividing the two chambers, and is used in connection with the passageway through which the water passed.

Q. 44. You say that the hand "relief valve," and  
556 its water-passage connection and valve-seat, each being described by you, were first introduced into use in the fire-department of the city of New York some time in the year 1865. At what time after that was it, if at all, that you applied to it your automatic device for opening and closing it?

A. Well, in the year 1869 there were drawings prepared by me for an automatic "relief valve," of which there was one made in 1870, by the person that I lent the drawings to, by the name of Robert Pallett,  
557 from which drawings he had one made in the year 1870, or 1871, I won't be positive which, which was applied to Engine No. 30. Before that time there was

a drawing made of a "relief valve" to screw on the discharge-gate of a pump, that was made in the year 1864. The next drawing was made in the last part of 1867.

Q. 45. What was the contrivance which you speak of having been reduced to drawings in 1864 and 1867?

A. The device of 1864 consisted of a piston and  
558 spring, with a spindle and hand-wheel combined for adjustment. The device for 1867 consisted of a valve, plunger, and spring, with an adjustable spindle and hand-wheel. In the device of 1864 the intention was to discharge the surplus water into the street. The device of 1867 was the valve to open in the discharge-passage leading into the suction-chamber, as now constructed on the Amoskeag engines.

Q. 46. Did you ever patent either of those devices?

A. No, sir: I made application at the Patent Office  
559 for a patent.

Q. 47. Was that application rejected upon a reference to some other similar device?

A. It was, — which instituted a case of interference.

Q. 48. In what year was that?

A. I made that application for a patent in 1871 or 1872: I am not certain which.

Q. 49. With whom was that interference case declared?

A. Three different parties, — Robert Pallett and  
560 two other parties.

Q. 50. That interference was about that device for automatically opening or shutting the "relief valve," was it not?

A. It was.

Q. 51. I now present to you complainant's Exhibits, K and K, No. 2, September 30, 1878, and ask you to state, if you know, when the device or devices for automatically opening and closing the "relief valve," represented in that exhibit, were first put into use  
561 upon a steam fire-engine in the fire-department of the city of New York?

A. Referring to the whole exhibit, I will state that the first one was applied to a steam fire-engine in April, 1874.

Q. 52. And it has been in use in that department ever since that time: has it, or has it not?

A. It has.

Q. 53. Look at the exhibits referred to in the last question, and state whether or not the "relief valve" cannot be operated by hand by the little wheel at the end of the valve-stem, independently of the automatic mechanism?

A. It can.

Q. 54. State whether or not such kind of "relief valve," with the automatic devices in connection therewith, as are represented by complainant's Exhibit, K, and Exhibit, K, No. 2, September 30, 1878, is or are now in use in the fire-department of the city of New York.

563 A. They are, with a few exceptions: few of the engines have not got them on, — and the engines that have not got them on are the Smith and Gould build of engines.

Q. 55. What kind of a "relief valve" have those engines, if you know?

A. I believe they are the hand-screw "relief valve."

Q. 56. The same kind that were used in the fire-department of the city of New York previous to the time of the use of your automatic devices represented 564 in the complainant's Exhibits, K and K, No. 2, September 30, 1878, now before you, — is that it?

A. The hand principle is the same, but different in form, without the automatic part.

Q. 57. State whether the "relief valve," valve-seat, and the water-passage from the suction or supply chamber to the discharge or pressure chamber to which the hose are attached is not the same, or substantially the same, as those devices contained in complainant's Exhibit, J, September 30, 1878, which I now hand 565 you, on all the engines not having your automatic devices for opening and closing the valve, and now used in the fire-department of the city of New York

A. It is substantially the same on the Smith build engines, but on the Gould build it is the same as the Amoskeag engines with a hand relief valve.

Q. 58. How long have these engines been in use in the fire-department of the city of New York?

A. I believe the Gould engine has been in use since 1869; but the Smith build of engines I am unable to  
566 give dates, as they were used in the volunteer fire-department, which organization ceased or dissolved in 1865, and a new organization was formed in place of it.

Q. 59. Previous to the introduction of your automatic mechanism for opening and closing the "relief valve," and now before you in complainant's Exhibits, K and K, No. 2, and excluding the Smith and Gould build of engines, was there a "relief valve" used in connection with the water-passage, to open and close  
567 the same, between the supply and pressure chambers of a water-pump, in use in the fire-department in the city of New York, on steam fire-engines?

A. There was.

Q. 60. Have you been subpoenaed in this case to attend here to-day, and submit yourself to an examination in this cause?

A. I have, sir.

Q. 61. Were your legal fees paid you at the time you were subpoenaed?

A. Yes, sir.

568 Q. 62. You have now been paid your legal fees for your attendance here to-morrow for cross-examination: have you not?

A. Yes, sir.

Q. 63. If you have the copy of the subpoena that was served on you in this case as a witness, I wish you to hand it to the Examiner, that he may file it as one of the complainant's Exhibits, if you have no objections. Are you willing to do that?

A. I am; but I want to put my initials on it.  
569

Witness puts his name on the lower left-hand corner, and it is marked "Complainant's Exhibit, M. J. A. S., Ex'r. October 2, 1878."

Adjourned to Thursday, October 3, 1878, at 11 A.M.

NEW YORK, October 3, 1878,  
11 o'clock A.M.

Pursuant to adjournment.

570 Present — Counsel as before.

Examination of Gilbert J. Orr continued.

Q. 64. You stated yesterday something about there being three steam fire-engines of the Smith build, and also one of the Gould build, and also a large number of the Amoskeag Company build, and that the same were in use in the fire-department of the city of New York. If you know, I wish you would state the number of each engine, and the places of location of the Smith  
571 and Gould make of engines.

A. The Smith engine is not known by its number at the present time, but is known as "battalion spare engine." There is one located at the headquarters of the Fifth Battalion, 132 West Tenth Street. One is located at the residence of the chief of the Eighth Battalion in Thirty-third Street, near Third Avenue. One I believe, — I am not positive, — is on Ward or Blackwell's Island, or Randall's Island. The Gould engine is located at West Farms, at the quarters of Chemical  
572 Engine No. 3.

Q. 65. During your examination on yesterday, I understood you to state that the Smith engines contained a pipe, or water-passage, located outside of the cylinder of the pump, and connecting the force or discharge chamber with the suction or supply chamber of the water-pump, like, or substantially like, the conduit, or water-passage, shown in complainant's Exhibit, J, September 30, 1878, which I now show you. Am I correct in that understanding?

573 A. Yes, sir.

Q. 66. I also understood you, during your examination of yesterday, that the Smith engines, of which you are now speaking, also contained a hand "relief valve," having its valve-seat in the end of the water passageway into which the relief valve fitted, like, or substantially like, complainant's Exhibit, J, September 30, 1878, now before you. Am I correct in that understanding?

A. Yes, sir, only different in form: the principle was the same.

574 Q. 67. Was or is the flow of water through that passageway in those Smith engines regulated or controlled by a hand "relief valve" like, or substantially like, that contained in complainant's Exhibit, J, September 30, 1878, and now before you? I mean in its flow or passage from the pressure or discharge chamber of the pump to the suction or supply chamber thereof.

Objected to as leading.

A. Yes, sir: it was.

Q. 68. In reference to the matters about which I  
575 have inquired of you to-day as having reference to the Smith make of engines, I desire you to state, if you know, whether the Gould make of engines contain these things or elements about which you have answered to-day.

A. I believe they do, but I never see the inside part of the pump: I judge from its operations, which are about the same.

Q. 69. I understand you to say that these Smith and Gould make of engines are now on reserve duty in  
576 the fire-department of the city of New York, and that they are used whenever required in that department the same as other engines. Am I correct in this understanding?

A. Yes, sir.

Q. 70. I understand you to have stated yesterday that the Smith and Gould make of engines, which you have testified about this morning as well as yesterday, have been in use in the fire-department of the city of New York for between ten and thirteen years last past,  
577 or thereabouts. Am I correct in that understanding?

A. The Smith engines have been in use since 1865 up to the present time; and the Gould engine, I think, has been in use since 1869 up to the present time.

Q. 71. If you know, I desire you to state whether or not the first Amoskeag engine that was put into use in the fire-department of the city of New York contained any kind of "relief valve" and water passageway, like, or substantially like, those you have been testifying about in this case.

578 A. That I could not say positively.

Q. 72. I desire you to state when first you saw an Amoskeag engine containing a "hand relief" valve and water passageway operating between the two chambers of a force and suction pump, like, or substantially like, complainant's Exhibit, J, September 30, 1878, or omitting the outside water passageway as shown in this exhibit, and locating it in and through the dividing wall or partition between the supply and force chambers of the water-pump.

579 A. I noticed the hand relief as constructed on the Amoskeag engines about the latter part of 1865 for the first time.

Q. 73. Where did you first observe this hand "relief valve," as stated in your last answer?

A. In engines in use in the fire-department of the city of New York.

Q. 74. About how many such engines did you see having this hand "relief valve," and its connections with the water passageway, which you have heretofore testified about in use in the fire-department of the city of New York, as stated in your last answer?

A. About all the Amoskeag engines that were then in use, as near as I remember.

*Cross-examination by F. H. BETTS, Esq.*

× Q. 75. You speak of certain engines having gone into use in the fire-department of the city of New York in 1865: is that the present fire-department?

Objected to as immaterial, whether it is or not.

581 A. No, sir: that was in the Metropolitan Fire-Department.

× Q. 76. How long did the Metropolitan Fire-Department continue its existence?

The same objection.

A. I think from May 4, 1865, to May 1, 1870.

× Q. 77. During the existence of the Metropolitan Fire-Department, was there any other Fire-Department in the city of New York?

The same objection.

582 A. No, sir.

× Q. 73. During the existence of the Metropolitan Fire-Department, did it use and control all the fire apparatus and engines in the city of New York?

The same objection.

A. Yes, sir: I believe it did.

× Q. 79. What body succeeded the Metropolitan Fire-Department on May 1, 1870?

A. There was a new Board of Commissioners appointed.

583 × Q. 80. Did they organize a new fire-department?

A. No, sir: I don't think they did.

× Q. 81. When was the present fire-department organized?

The same objection.

A. About the organization of the fire-department, I don't know, only by the change of commissioners, which was in 1873.

× Q. 82. Are you familiar with the working of "relief valves" on the engines of the fire-department?

584 A. Yes, sir.

× Q. 83. Would it make any difference in the working of the engines, if, when the nozzle was shut off, the surplus water would be returned into a cistern from which it was drawn, instead of into the suction-chamber of a pump?

A. No, sir: it would not.

× Q. 84. Would you regard an engine in which the connections were so arranged, that, when the relief valve opened, the surplus water was returned into a  
585 cistern or source of supply from which it was drawn, as substantially the same, or substantially different from one in which the relief valve was so located as to return the surplus water into the suction or receiving chamber?

Objected to for the reason that the witness has not been put upon the stand, or examined as an expert witness; and, further, as introducing new matter on the cross-examination of the witness; and further objected to as immaterial for any purposes of this suit.

586 A. I regard its workings to be about the same.

× Q. 85. Do you regard the automatic relief valve as a great improvement in a valve worked by hand?



The words "great improvement" are objected to as intending to instruct the witness of the kind or character of the answer desired by examining counsel. It is, therefore, improper and incompetent.

A. I do, sir.

587 *Re-direct Examination*, by MARCUS P. NORTON, Esq.

R. D. 86. In what respect do you regard the automatic relief valve an improvement upon the "hand relief valve"?

A. On the ground of its ready appliance, more reliable than to be opened by hand.

R. D. 87. Explain how it is more reliable than the hand "relief valve."

A. There are times when an engine is working at a fire that the engineer's attention is called to his boiler  
588 for the purpose of replenishing his furnace with fuel; as at that moment the nozzle may be closed, and the distance that he would be away from the location of the "relief valve," that by the time he would reach the point the hose may be burst, or the engine stopped working; whereby, having it automatic, the engine can run right straight along without the assistance of the engineer as long as he has steam sufficient to run the engine.

R. D. 88. The only difference, then, between the  
589 automatic "relief valve" and the hand "relief valve" is in the means employed to open and close the "relief valve," is it not?

A. It is, sir.

R. D. 89. They are each employed for the same use or purpose, are they not, in connection with one end of the opening, or water passageway, between the pressure or discharge chamber and the suction or supply chamber of a water-pump used in a steam fire-engine, are they not?

590 A. Yes, sir.

R. D. 90. × Q. 84 speaks of "surplus water" being "returned into a cistern." What is a cistern, as you understand it?

A. A reservoir or receptacle for water.

R. D. 91. Used independent of any kind of machinery: is that it?

A. No, sir: it can be part of the machine.

R. D. 92. Do the steam fire-engines now in use in the city of New York have "a cistern" connected with  
591 them, or any of them?

A. Yes, sir: the steam fire-engines have a cistern or reservoir for supplying the boiler with fresh water.

R. D. 93. Is that cistern in any wise connected with the water force-pump of the engine?

A. It is with the feed force-pump supplying the boiler.

R. D. 94. How is the feed force-pump supplying the boiler arranged, with reference to the water-pump, having pressure and supply chambers?

592 A. It is a separate arrangement, and in no wise connected with it, excepting with a branch pipe.

R. D. 95. And that branch pipe is for the purpose of drawing water from the main or force pump to the smaller pump used in supplying the boiler with fresh water, is it not?

A. Yes, sir.

R. D. 96. The force-pump of a steam fire-engine, containing the suction or supply chamber, and the pressure or discharge chamber, is commonly known as  
593 the main pump of an engine, is it not?

A. It is.

R. D. 97. Into which side of the main pump is the pipe inserted which leads to the separate or feed-pump, used in supplying the boiler with fresh water, — I mean whether in the supply-chamber or the pressure-chamber is that pipe inserted?

A. On the discharge side of the main pump, but on the suction side of the feed-pump.

R. D. 98. Do you regard the suction or supply  
594 chamber of the main pump as "a cistern," such as you referred to in your answers to X Qs. 83 and 84?

- A. I do regard it as a cistern or receptacle for holding water.

R. D. 99. I observe in complainant's Exhibit, K,

and Exhibit K, No. 2, September 30, 1878, six projections, or handles, extending outward from the outward surface of the exhibit. Please explain the use and purpose of those handles, or projections.

A. Those projections, or handles, on the exhibit are  
595 used for the purpose of adjusting the different pressures by the springs incased inside.

R. D. 100. If there should be wanted a high or low degree of pressure upon the "relief valve," you would regulate the same by means of those projections, or handles, would you not?

A. I would where the closing nozzle and the action of the "relief valve" is required.

R. D. 101. And that would depend upon the number of hose employed in the discharging of water upon  
596 the fire, would it not?

A. Yes, sir.

R. D. 102. I observe, at the end of the "relief-valve" spindle in complainant's Exhibit, K, and Exhibit K, No. 2, September 30, 1878, a small wheel with a milled periphery, and placed directly opposite to the end containing the "relief valve." Please explain the use or purpose of that milled wheel.

A. There are two uses it can be put to,—first, that the valve can be removed from the seat so as to prevent  
597 accumulation of pressure to enable the engineer to work his engine under a low pressure of steam; second, it can be used to relieve the pump of the heavy pressure that the "relief-valve" spring would be gauged at when the nozzle is closed, if the engineer should require to feed his boiler, thereby relieving the strain on the hose and pump.

R. D. 103. It also may be used for the purpose of opening the "relief valve" so as to relieve the discharge-chamber and the various lines of hose from any  
598 excessive pressure, may it not?

A. Yes, sir.

R. D. 104. It may also be used for the purpose of closing the "relief valve" in the valve-seat at the end of the opening, or water passageway, between the pressure or discharge chamber and the suction or supply

chamber of the main pump of a steam fire-engine, may it not?

A. Yes, sir.

599

*Re-cross Examination.*

R. D. 105. Suppose one of the New York fire-engines was drawing water from a fire-well or from a cistern in the street, or from the river, as I understand they often do, and connection was arranged so that when the relief valve was opened the water flowed back into the well, cistern, or river; would the engine operate substantially the same as if the water was returned through the "relief valve" into the suction or receiving chamber of the pump?

600 Objected to on the ground that the hypothetical conditions do not even in the remotest manner relate to or have to do with the invention contained in the patent on which this suit is founded. The question is therefore incompetent and improper. And,

2d, That the witness was not put upon the stand as an expert witness, but simply to testify as to matters of fact about the defendant's steam fire-engines now in use, and those that have been in use, in this city, for the past thirteen years.

601 3d, If defendant's counsel desires to do any experting with this witness, he must make him his own witness for that purpose.

In answer to the objections of complainant's counsel, defendant's counsel refers to the numerous questions on the direct examination in which the opinion of the witness is asked as to a substantial similarity and dissimilarity between different devices.

602 Complainant's counsel desires the defendant's counsel to point to a single instance of the kind stated by him in his rejoinder about any "*opinion*" of the witness as touching the matter inquired of in the last question.

And, further, witness has been required to state matter concerning an invention claimed by him to have been patented as his invention.

If examining counsel will re-cross examine the witness concerning the steam fire-engines used in the fire-

department of the city of New York, complainant's counsel will not object, although it should have been done on the cross-examination.

603 A. It would work substantially the same.

GILBERT J. ORR.

Subscribed and sworn to before me, this October 3, 1878.

JOHN A. SHIELDS,  
*Examiner, &c.*

Adjourned to October 16, 1878, at 11 A.M.

604

NEW YORK, October 23, 1878,  
3 o'clock P.M.

Present — Counsel as before.

Cross-examination of James Knibbs resumed: —

× Q. 86. You say that you applied a circulating relief valve to the "Arba Reade" engine on April 30, 1860. Did that same valve remain on the engine until the new valve was put on and tried on February 12 and 13, 1863?

605 A. I believe that it did.

× Q. 87. You say that in trial of this valve, which took place on April 30, 1860, the valve did not work wholly satisfactorily. Did you make any change in it at that time to make it work more satisfactorily?

A. At that trial it did work satisfactorily, but not at first.

× Q. 88. Do you mean that at the trial of that valve, which was had on 30th April, 1860, this circulating valve of yours did work practically and success-  
606 fully?

A. I mean to be understood as saying, that, so far as the operation of the engine was concerned at that trial, it did work satisfactory under the conditions which the engine was then working; which was that the engine was working under a short line of hose, fifty or one hundred feet to the best of my knowledge, with the water discharging from the pipe; by keeping the relief

valve open we could keep a pressure on the discharge side of the pump down to about fifty or sixty pounds; 607 by closing the discharge-gate on the engine the pressure would run up, and stop the engine from working; consequently you could not feed your boiler unless opening one of the remaining discharge-gates, and letting the surplus water flow off into the street, which the relief valve was not able to return back to the receiving side of the pump.

× Q. 89. Do you call such operation of the relief valve, as you have described in the last answer, a practical or a successful operation of it?

608 A. Judging from results produced since, I should call it unsatisfactory. At that time at that trial I thought it was satisfactory.

× Q. 90. Is that what you meant when you said, in answer to the 76th Q. and 77th Q., that "the trial was not satisfactory," and "not wholly so?" Did you mean that you thought the trial at the time was satisfactory, but that results produced since have been so much better, that, measured by them, it would not be thought now satisfactory?

609 A. I meant to say that the results produced on that trial might have been satisfactory, so far as the trial itself was concerned, but not so practically working at fires for the two years thereafter, or up to the time of the changing of the valve.

× Q. 91. Was the operation of the valve on that trial of April 30, 1860, so satisfactory or so practically successful that you determined to continue to use the valve on your engine?

A. Only in the manner in which I have already 610 stated.

× Q. 92. Did you continue to use it on your engine after that trial?

A. We did, in the manner in which I have already stated.

× Q. 93. What do you mean by the "manner already stated"?

A. I have reference to the latter part of my answer to Q. 88.

× Q. 94. During the period from April 30, 1860, 611 to February 12, 1863, when the valve was changed, was the valve frequently used at fires?

A. It was, under the conditions already named.

× Q. 95. During that period and before any change was made in it, was it of any practical utility to the working of the engine?

A. Undoubtedly it was, in connection with the discharge-gate, as already mentioned in my answer to Q. 88.

× Q. 96. Were any changes or alterations made in 612 this valve or its connections during this period from April 30, 1860, to February 12, 1863?

A. To the best of my knowledge there was not.

× Q. 97. Did this valve, as it was applied by you, as you say, on April 30, 1860, and used down to February, 1863, embody the invention described and claimed in your patent on which this suit is brought?

Objected to as incompetent, and that the witness is not an expert, and that the question is not in cross-examination.

613 A. I can't tell: it didn't work satisfactory, and the one in 1863 did.

× Q. 98. Don't you know whether that valve of 1860 embraced your inventions, or not?

The same objections.

A. I shall leave that for the court and experts to decide, as I am no expert myself.

× Q. 99. Did you regard this valve of 1860 at the time, or subsequently down to 1863, as a perfected or practical contrivance?

614 The same objection, and as immaterial also.

A. It was not perfected.

× Q. 100. Do I understand you that it never was perfected or practical down to 1863?

A. Not on the "Arba Reade" steamer.

× Q. 101. Was it ever on any other steamer?

A. It was on "The J. C. Osgood," No. 3, of Troy, put on that engine at my request, and by orders of the Board of Fire Commissioners of the city of Troy, which engine was delivered to the city of Troy about

615 the year 1862; early in that year; to the best of my recollection, January, 1862, I believe.

× Q. 102. When was this valve applied to "The J. C. Osgood"?

A. At the time "The J. C. Osgood" was built.

× Q. 103. Who put this valve on "The J. C. Osgood"?

A. The builders, by orders, as already stated, of the Board of Fire Commissioners.

× Q. 104. Who were the builders?

616 A. The Amoskeag Manufacturing Company.

× Q. 105. Have you got here any record showing when said engine "J. C. Osgood" was delivered by its builders to the city of Troy with this valve on it?

A. Yes, sir.

× Q. 106. When was it?

A. It arrived in Troy January 14, 1862, and tried Friday, January 17.

× Q. 107. Was the working of the valve tried at that time?

617 A. I believe the record says it was.

× Q. 108. Did the valve work satisfactory?

A. It did.

× Q. 109. Please describe this valve and its connections with this engine, as it was constructed and applied to "The J. C. Osgood."

Objected to as not cross-examination, and notice given to the defence, that, by asking the question, they make the witness their own in respect to the answer.

618 A. It was a hand valve used to open and close an opening in the partition of the pump, such as is generally used at the present time.

× Q. 110. Do you mean that it was a valve which opened and closed, and had its seat in the partition between the receiving and discharge sides of the pump?

The same objections.

A. I do.

× Q. 111. When it was opened, would it allow the return of any surplus water in the discharge side of the pump into the receiving side thereof?

619 The same objections.



A. It would.

× Q. 112. How did the arrangement of this valve and its connections on "The J. C. Osgood," as it was built and delivered, correspond with the arrangement of the valve and its connections shown in the model, complainant's Exhibit, J?

The same objection and notice, and also that the witness is not an expert.

A. They were one and the same thing: they both  
620 connect the suction or receiving with the force or discharge side of the pump.

× Q. 113. Was the valve and its arrangement in "The J. C. Osgood," as it was built and delivered, substantially like that shown and described in your patent of May 24, 1864?

The same objection and notice as to last question.

A. I so understand it.

× Q. 114. You say that this valve was put on by the builders, and by orders of the fire commissioners of  
621 the city of Troy, at your request. In what form did you make that request, and to whom?

A. I made it to the then chief engineer and the committee on apparatus of the city of Troy, verbally.

× Q. 115. When was "The J. C. Osgood" put into regular service in the fire-department of the city of Troy? Can you tell by your record?

A. Monday, January 27, 1862.

× Q. 116. How long did she continue in the regular fire-department service of said city?

622 A. She is in service yet.

× Q. 117. Has she been in service ever since that date?

A. All the time, except when off duty for repairs, to the best of my knowledge.

× Q. 118. How long did that valve, constructed and arranged as you have described, remain in use in that engine?

The same objection and notice.

A. I believe it is on yet.

623 × Q. 119. And has been used in the regular service of the fire-department ever since the engine went into service in January, 1862?

The same objection and notice.

A. I presume it has been used. I am not the engineer of that steamer, and could not answer correctly.

× Q. 120. Were you ever paid any thing for its use?

Objected to as immaterial, and not cross-examination.

624 A. No, sir.

× Q. 121. Did you ever object to the use of that valve on "The J. C. Osgood" by the fire-department of the city of Troy?

The same objection and notice.

A. I can't answer that question; Mr. Norton attended to all that business; I am under the impression that the city of Troy have a written permission to use it on one, at least, if not all their engines.

625 × Q. 122. Prior to obtaining a patent for this device, did you ever object to its use by the fire-department of the city of Troy?

The same objection and notice.

A. I never did. I acted solely under the instructions of Mr. Norton, and I can't say whether he did, or not, object.

× Q. 123. Did Mr. Norton have any thing to do with the matter at all prior to the time when you assigned to him one-half interest in the invention?

The same objection and notice.

626 A. As soon as I saw the successful working of it on "The J. C. Osgood," I applied to Mr. Norton as to what course to pursue. He advised me at that time to make it work as successful on "The Arba Reade," and, at the same time, told me on what conditions he would take an interest in the patent.

× Q. 124. Was the time that you applied to him, as stated in the last answer, about the same time that you executed the assignment to him?

627 The same objection and notice, and immaterial and incompetent.

A. No, sir: it was before; to the best of my recollection it was as early as February or March, 1862, when I put myself under Mr. Norton's instructions in

this matter. I immediately set to work and made patterns and valve, and said work lay in the engine-house at least four or five months ready to put on the engine as soon as permission was obtained from the Board of Fire Commissioners to take "The Arba Reade" off of duty while said valve and connections  
628 were being put on.

× Q. 125. Did you ever instruct Mr. Norton, or any one else, to object to the use of the valve on "The J. C. Osgood"?

The same objection and notice, and immaterial.

A. I believe not.

× Q. 126. Was it always used on "The J. C. Osgood" with your approval and consent?

The same objection and notice.

A. I never approved or objected.

629 × Q. 127. Did the valve always work successfully on "The J. C. Osgood"?

The same objection and notice, and also objected to on the ground that the witness has already testified he has not been the engineer of "The J. C. Osgood," and is not acquainted with the workings.

A. I couldn't tell: I am not the engineer on that steamer.

× Q. 128. Did it so far as you know?

The same objection, and also that the witness has  
630 shown he has no knowledge on the subject.

A. I really don't know any thing about it.

× Q. 129. You saw it tried, didn't you?

A. Yes, sir.

× Q. 130. It worked successfully then, did it not?

A. That is sixteen years ago, and I couldn't answer: I don't remember.

× Q. 131. Did you keep a record of that trial in the memorandum-book you referred to?

A. I did not keep the record referred to.

631 × Q. 132. Was there a record kept? if so, please read it.

Objected to the last part of the question, as there is no foundation laid; also as incompetent and secondary.

A. It says: "Friday, January 17, 1862, steamer

'Osgood' tried by crew of 'Reade' (fuel furnished by 'Reade'), from new hydrant, corner Third and Division; worked well, made twenty-five pounds of steam in five minutes; run-around pump worked satisfactory; steam valve too much lap."

632

Adjourned to 78 Irving Place, at 7.45 P.M.

78 Irving Place, 7.45 P.M.

*Present*—F. H. BETTS, Esq., *Counsel for Defendant*,  
and MARCUS P. NORTON, Esq., of *Counsel*  
*for Complainant*.

633 X Q. 133. What is the record-book which you read from in giving the last answer, and to which you have referred for the purpose of giving dates in several previous answers?

A. That is the record-book of the "Arba Reade" steamer: it relates more particularly to the "Arba Reade" steamer; still, you'll find some outside matters in it mentioned occasionally.

X Q. 134. Is it a book officially kept? and who by?

A. It was kept at that time by the captain of the company.

634 X Q. 135. Was it part of his official duties to keep it?

A. Not as early as 1860: it was not. It was voluntarily on his part at that time.

X Q. 136. Was it after 1860?

A. It was, in one sense of the word. The commissioners, after their organization, which, I think, was in 1861, required each company to make returns on blanks furnished by them; also to keep a duplicate, either on the record-book or one of the above blanks referred to.

635 X Q. 137. Do the words "run-around pump worked satisfactory," in the record of January 17, 1862, refer to this relief valve of yours?

Objected to as incompetent.

A. I presume they do.

X Q. 138. Who was the engineer of "The J. C. Osgood" in 1862?

Objected to as not material, and not cross-examination.

A. Andrew D. Collins was the regular engineer for  
636 a part of the year.

× Q. 139. How long did he continue engineer?  
The same objection.

A. I believe it was up to about 1868.

× Q. 140. Is he now living? and, if so, where?  
The same objection.

A. He is living in Troy.

× Q. 141. Who was the chief engineer to whom  
you made the request to put this relief valve on "The  
J. C. Osgood"?

637 The same objection.

A. N. B. Starbuck.

× Q. 142. Is he now living?  
The same objection.

A. No, sir.

× Q. 143. You say that you made this request  
verbally. What did you say in making that request,  
as near as you remember?

The same objection.

A. The request was to have him request the com-  
638 missioners, to have it put in that engine on an enlarged  
scale, and move direct, which was done by putting it  
in the partition of the pump.

× Q. 144. Do you mean a larger scale, and more  
direct location, than it was in "The Arba Reade"?

A. Yes, sir.

× Q. 145. Did you say any thing else than that in  
making this request?

The same objection.

A. I don't remember that any thing else was said  
639 in connection with that valve at that time.

× Q. 146. Did you furnish any drawings or give  
any specific directions as to how to construct or apply  
the valve?

A. I believe there was a light pencil-sketch fur-  
nished Mr. Bean, who was then superintendent of the  
Amoskeag Company's works: Mr. Bean was in Troy at  
that time; sent for.

× Q. 147. Did you make and furnish this sketch?  
if not, who?

640 A. I am under the impression that if there was any  
one furnished, that I did do so.

× Q. 148. You say that you are under the impres-  
sion that the city of Troy has a written permission to  
use this valve on one, at least, if not all their engines :  
when was that given to them?

The same objection.

A. I could not say precisely, but I believe it to be  
about the year 1865 or 1866.

× Q. 149. Did they ever pay you any thing for  
641 this permission?

The same objection.

A. No, sir.

× Q. 150. Was this relief valve applied to any  
other fire-engines at your request? if so, to what one  
next?

The same objection.

A. No, sir.

× Q. 151. Now, I understand you to say that the  
next thing that you did, after you saw the successful  
642 working of the "Osgood," was to make a new valve  
for "The Arba Reade;" and that new valve was ap-  
plied on the 12th of February, 1863: is that so?

Complainant's counsel here interposes objections to  
all the questions that have been put to this witness  
and by him answered, as touching every subject-matter  
not inquired into on the direct examination of the wit-  
ness; and also here interposes objections to any further  
cross-examination of this witness in this line, and upon  
the several matters now being pursued by examining  
643 counsel, and assigns as reasons therefor each and every  
objection that has been taken by complainant's counsel  
during the so-called cross-examination of the witness.

These several objections and reasons therefor, now  
and here taken and assigned as against a further cross-  
examination of this witness upon matters in no wise  
connected with or growing out of his examination in  
chief, are taken in the form and manner stated, for the  
purpose of saving time by entering these objections to  
each question propounded by examining counsel.

644 No further objections than these will be taken to such questions separately, but complainant's counsel gives notice that the objections and reasons here assigned will stand as against each and every question that may hereafter be put to this witness by defendant's counsel, during this examination.

A. New valve and connections.

× Q. 152. And this new valve which you made and applied to "The Arba Reade" on February 12, 1863, was the automatic valve which you produced at  
645 the last hearing: was it not?

A. The valve and connections,—undoubtedly it was.

× Q. 153. You spoke of having a model made of that valve. Have you had one made?

A. There is a model of it; yes, sir.

× Q. 154. Did you regard the automatic form of the valve, which you made in February, 1863, as an improved and better form than the simple hand relief?

646 Objected to, outside the other objection, as immaterial and improper, and calling for the past opinion of the witness.

A. Well, I am not prepared to say as to that: it was merely an experiment, that spring was; it was not essential to the successful working of that valve.

× Q. 155. Did the valve work well and successfully as an automatic valve?

A. It worked well as a relief valve: the automatic part of it worked satisfactory, as far as the spring went.

647 × Q. 156. Was this valve from the first a successful automatically working relief valve?

A. That and its connections were.

× Q. 157. Did you regard the automatic features and workings of that valve and its connections as of value and importance from the time that you first used it?

A. I did.

× Q. 158. How long did that valve continue to be used in the same form in which it was first applied, in 1863?

648 A. To the time the engine was taken to pieces last summer for repairs.

× Q. 159. Was it always during the whole period constructed so as that it could be used as an automatic valve?

A. Yes, sir.

× Q. 160. Did you ever make any other relief valve that operated practically and successfully except that one?

A. I made one last summer as an experiment, and  
649 tried it.

× Q. 161. Is that the only one?

A. That is the only one.

× Q. 162. Were the materials out of which you made these two valves and their connections for "The Arba Reade" in 1860 and in 1863, materials belonging to the city of Troy, or were they purchased by yourself?

A. I believe the city furnished the material.

× Q. 163. Did you make these valves while in their  
650 employ?

Outside of the general objections taken by complainant's counsel on this record, this question is objected to as immaterial, whether he did, or did not, make the valves referred to in the last question while in the employ of the city of Troy.

A. I should like to correct myself on the last question, in connection with answering this one, by stating that in 1861 the "Arba Reade" steamer was not owned by the city of Troy, but by seven trustees representing  
651 the "Arba Reade" steamer company. After that time said engine was leased to the city of Troy, and continued to be so leased up to the year 1877, when it was purchased by the city, and the trusteeship dissolved on application to the court. In 1860 and 1861 I was employed by the "Arba Reade" steamer company; from that time to the present I have been in the employ of the city.

× Q. 164. Why didn't you say any thing about the automatic features of your valve in your patent on  
652 which this suit is brought?

A. Because I think it was a gross oversight, both on my part and that of my associate, Mr. Norton. For my own part I don't know why it wasn't mentioned.



× Q. 165. Have you got here a model of the automatic valve made and applied in 1863?

A. Yes, sir.

The witness produces it; and it is marked "Exhibit, Automatic Valve. J. A. S., Ex'r."

653

*Re-direct Examination.*

In view of the several objections and reasons assigned therefor to the several questions propounded to the witness by the defendant's counsel during the so-called cross-examination of the witness, complainant's counsel proceeds with the re-direct examination of the witness *de bene esse*.

R. D. 166. You have, substantially, been asked to state the time when you first began to construct a relief valve for a steam fire-engine of the kind shown  
654 in complainant's Exhibit, J, September 30, 1878, or one substantially like unto that. State, if you remember, the time when you first began it, the progress you made with it, and the length of the time you experimented with it on the steam fire-engine "Arba Reade," of the city of Troy?

A. I began it in April, 1860, and put it in and tried it about the last of April, I think; and it remained in that shape on that engine until 1863. During that time the relief valve was put in "The Jason C. Os-  
655 good," which I considered nothing more than a continuation of my experiment.

Last part of the answer objected to, as immaterial and irresponsive, by defendant's counsel.

R. D. 167. State whether, the time you were experimenting with that relief valve on the steam fire-engine "Arba Reade," at Troy, N. Y., you made several alterations or changes in any part of the valve or its connections between the force and supply chambers of it; and, should you answer affirmatively, you may describe, as near as you recollect, such changes or altera-  
656 tions.

Objected to as leading.

A. To what time does your question apply?

R. D. 168. It applies to the time you were experi-

menting with it, which you have stated to be between April, 1860, and 1862 or 1863, when it was put in "The Jason C. Osgood" under your directions. I refer to no other time in this question than that.

Objected to, as the question does not correctly state  
657 what the testimony of the witness has been.

A. The changes were made in "The Jason C. Osgood" by the making a direct opening through the partition of the pump of about two inches diameter, with the valve controlling the same opening. The experiment was then continued on the "Arba Reade" steamer by taking off the gas-pipe and globe-valve, with its numerous crooks or bends, and introducing in place thereof a pipe as straight as it was possible to make it, about two inches diameter, with an automatic spring-  
658 valve so arranged as to open and close the same.

R. D. 169. In what year, if you remember, did the experiment spoken of in your last answer cease or terminate?

Objected to, as the term "experiment" is incorrectly used with reference to what is stated to have been done, and as leading and suggestive to the witness.

A. I believe it was the 13th of February, 1863. I believe you'll find a record of it in said record-book on or about that date.

659 R. D. 170. In answer to  $\times$  Q. 126 and  $\times$  Q. 127 and Q. 128, you speak of not being able to tell whether the relief valve put on "The Jason C. Osgood" in 1862, did, or did not, operate successfully: what do you mean to have the court understand by those answers on that subject?

Objected to as the answers are plain, and do not need explanation.

A. I mean that I never ran the "Osgood" only once in my life, and that was at a short trial when that  
660 engine first came to Troy.

Witness going on with the answer, and says, "Consequently," when Mr. Norton stops him, and refuses to allow him to proceed, notwithstanding the protest of defendant's counsel.

R. D. 171. Begin at the word "consequently," and

go on till you get through with your talk, as a further answer to the question, if you have any to make.

A. Considering myself under oath, regarding the value of that oath in the light that I do, and not having run that engine at fires, I didn't consider myself competent to answer the practical workings of that valve on that engine.

R. D. 172. Did you ever hear or know that that valve did not work successfully on that engine from the time it was put there until now?

A. I never did.

R. D. 173. You say substantially that the pipe first put upon "The Arba Reade" to connect the force and the supply chambers of the fire-engine pump in connection with your relief valve was so crooked or illy-shapen, and of so small capacity, that it did not work to your satisfaction. I understood you to state, having those conditions in your mind, that you afterwards enlarged that tube, or pipe, or water passageway, and made it as even or as straight as you conveniently could do, and at the same time connect the discharge and suction chambers of the main or force pump, and that it thereupon operated more successfully. Am I correct in this understanding?

663 Objected to as leading.

A. Yes, sir.

R. D. 174. You speak on this examination about conferring with your counsel, Marcus P. Norton of Troy, concerning this invention, and the course to pursue with reference to it, with a view of protecting it by patent: do you remember of his having advised you about that time, or at some time previous to applying for the patent, that, inasmuch as you had not shown the automatic part in the model you had prepared for the Patent Office, it was immaterial about that, as, in case your relief valve and its connections were patented, you would have a right to operate it by hand or by other means, automatically or not, or words substantially the same?

664 Objected to, first, as the question does not correctly state what the witness has testified to; second, as leading.

A. Yes, sir. I remember speaking to him about it; but, as to the exact time that this conversation took  
665 place, I don't remember.

R. D. 175. In all that you did after you employed Norton as your counsel with reference to this invention, you did under his advice and instructions as your counsel, did you not, and until the obtaining of the patent, May 24, 1864?

Objected to as leading.

A. I did.

Counsel for complainant gives notice to defendant's counsel that this witness will be called on the part of  
666 the complainant for further examination in this cause, in rebuttal evidence, should it become necessary so to do, after defendant's direct case is completed; and that this re-direct examination has been under the conditions stated in the beginning of it.

*Re-cross Examination.*

R. C. 177. Do you remember whether the time you had such a conversation with Mr. Norton as that described by him in the 174th question, was before, or  
667 after, you obtained your patent?

A. I could not say: I could not locate the time in my own mind as to give a satisfactory answer to that. - As to time I have reference.

R. C. 178. Did you make the model which was used for the application of this patent? or did Mr. Norton have it made?

A. Mr. Norton had it made.

R. C. 179. Did you see it before it was finished, or give any directions about it?

668 A. I believe not. I think he made it from drawings.

R. C. 180. Did you furnish the drawings, or did he make them?

A. Mr. Norton furnished the drawings.

R. C. 181. Can you give any reason why the model did not show the automatic features of your valve, except that, as before stated by you, it was an oversight?

A. I don't recollect stating of it being an oversight.  
 669 I think I stated that it might have been an oversight,  
 or words to that effect.

R. C. 182. Can you give any other reason?

A. No, sir.

R. C. 183. Was it not intended to keep the automatic features a secret, so that you could use it yourself unknown to others?

Objected to, as not only being immaterial, but as being outside the matters at issue in the pleadings.

A. No, sir. I had no such thought.

670 R. C. 184. Did you not inquire of the engineer of "The J. C. Osgood" how the relief valve in that engine worked? and, if so, what information did you get?

A. I never asked him, to my knowledge.

R. C. 185. Did you ever ask anybody else about that?

A. No, sir, not to my knowledge.

R. C. 186. Is it necessary to the practical working of your relief valve that the pipe connecting the discharge and suction chambers, when a pipe is used,  
 671 should be larger inside diameter than the opening of the valve?

A. Not necessarily so, although the larger the better: it gives a freer circulation of the water.

R. C. 187. Is the following the record of the first trial of your relief valve of 1860, as it appears in the record-book already referred to: "Monday, April 30, 1860, machine taken to front Fulton Street at three P.M., for the purpose of testing leather valves on *lignum vitæ*, and new (Knibbs) waterway around the pump,  
 672 afterwards tried at hydrant, corner State and Third. All worked well during trial at Fulton Street"?

A. I say that undoubtedly it did, because we used a short line of hose on those experiments. I won't answer for that record, as I didn't make it; but I will state that I have no doubt it is correct from the book.

R. C. 188. Is the record correctly quoted in the last question?

A. It is.

R. C. 189. Is there any other mention of that  
 673 "Arba Reade" valve in that record-book?

Objected to as immaterial, and, further, that the witness has stated that he had nothing to do with the preparation of that record, and that it is not an official record.

A. I believe you'll find it mentioned on or about the 13th February, 1863.

R. C. 190. Please read those mentions.

A. "Thursday, February 12, 1863, new arrangement for working water around the pump put on."  
 674 "Friday, February 13, trial engine taken (at three P.M.) to a well on Third Street, South Troy, for the purpose of testing arrangement put on yesterday. Relief pressure at sixty pounds, with gate shut, valve open, worked freely, keeping up speed; all satisfactory; worked about half-hour; made 3,378 revolutions. Those are the only mentions in the book that I am aware of about this valve."

R. C. 191. Please state the names and present residences, as far as you know and remember, of all the  
 675 persons who were members of the "Arba Reade" engine company in 1860 to 1863.

A. I will give as far as I remember: William E. Hagan, on Second Street, Troy; John H. Willard, on Second Street, below the Seminary, Troy; Willard Gray, cashier of National State Bank; James Morrison, jun., resides on First Street; E. W. Stoddard, druggist, corner of Third and Congress Streets; E. H. Chapin, Superintendent of the Troy Water Works; C. W. Tillinghast, of the firm of J. M. Warren & Co.;  
 676 Joseph W. Fuller, Walter P. Warren, both of the firm of Fuller, Warren, & Co., stove manufacturers, on River Street. There were others, and many are dead.

*Re-direct Examination.*

R. D. 192. During your re-cross examination quotations have been made from a record-book brought here by you from Troy. Did you give any directions as to the making of entries in that book?

A. No, sir.

677 R. D. 193. The entries of all experiments made by you about this relief valve and its connections were not entered upon this book, were they?

Objected to as leading.

A. I couldn't answer, not having looked the record book through.

R. D. 194. Did you yourself make any entries of the various experiments made by you between April, 1860, and January, 1863, upon or about this relief valve and its connections with the discharge and suction chambers of the main or force pump of a steam fire-engine?

Objected to, as the witness has not stated that there were various experiments made during that period.

A. No, sir.

R. D. 195. State whether, in point of fact, you did make the experiments referred to in the last question as well as in several other questions put to you by complainant's counsel on this examination.

Objected to as leading and indefinite.

679 A. I did.

*Re-cross Examination.*

R. C. 196. Did you make any experiments to do any thing about the valve, except the following, which I now state: First, you made and applied the valve of April 30, 1860, and used it without change till February, 1863; second, you requested the placing of the valve on "The J. C. Osgood," and tried it when the engine first arrived in January, 1862; third, in February, 1863, you took off the old valve of "The Arba Reade," and substituted a new automatic valve and connections, and continued to use that without change for many years. Is that a correct statement of your doings in the premises?

Objected to, because the record shows that the counsel has not stated all the changes given by the witness, among which are the following; namely, The enlargement and re-shaping of the connecting pipe, or waterway, between the discharge and suction chambers, and the taking off of what the witness termed a gas-pipe connection, because it was too small to use on "The Arba Reade," and the placing in its stead of a new and more efficient connecting pipe, or waterway, on that

steamer, "Arba Reade;" otherwise the question is not objected to.

Defendant's counsel states that the thing referred to in the objection is included under the third heading of his question.

He objects to the objection as leading and suggestive.

A. That is the way that I understand it.

*Re-direct Examination.*

R. D. 197. You have heard read the objections of complainant's counsel to the last question, and the reasons there assigned as grounds of the objections: state whether you did, or did not, make the changes, alterations, or modifications stated by complainant's counsel in his objections to the last question.

683 Objected to as improper and leading.

A. The only changes that were made then: the first one was a small gas-pipe which was removed in 1863; the large one spoken of substituted in place thereof; these were the changes made, as I understand the question.

R. D. 198. At what time was this pipe straightened out, and the kinks and twists taken out of it, and the surface made smoother inside, for the more free circulation of water from one chamber to the other, as you  
684 have testified?

A. In 1863.

R. D. 199. What time in 1863?

A. About February 12.

R. D. 200. Now, why did you make these changes?

A. As already stated, the first pipe on "The Arba Reade" was too small and too crooked to admit of a free circulation of the water between the two chambers of the pump.

R. D. 201. What was the effect produced upon the  
685 engine by these changes and alterations that you have last described? I mean in the working of the engine in the suction of, and the discharge of, water upon burning buildings?

A. In the last instance you had full control of all



the water that the engine might be draughting ; it could all be discharged on a fire, or the gates all closed on the engine, and all of it returned back into the receiving side of the pump : whereas in the former, owing to its smallness and crookedness, that could not be accomplished.

*Re-cross Examination.*

R. C. 202. What the counsel for complainant has called straightening out the bends and smoothing the interior of the pipe, was all accomplished, as I understand it, by taking off the old pipe, and putting on a new connection, at the time you substituted the automatic valve for the old valve of "The Arba Reade"?

A. It was.

687

JAMES KNIBBS.

Subscribed and sworn to before me this October 23, 1878.

JOHN A. SHIELDS,  
*Examiner, &c.*

Adjourned to Thursday, at the office of F. H. Betts, Esq., 20 Nassau Street, New York, at 11 o'clock A.M.

688

NEW YORK, Thursday, October 24, 1878,  
11 o'clock A.M.

Pursuant to adjournment.

Adjourned by consent to Friday, October 25, at 11 A.M.

689

NEW YORK, October 25, 1878,  
11 o'clock A.M.

Met pursuant to adjournment of the 24th inst.

Present — Counsel as before.

Samuel P. Kittle, a witness produced on behalf of the plaintiff, being duly sworn, deposes and says : —

Q. 1. State your name, age, residence, and occupation.

A. Samuel P. Kittle; I am fifty-three years of age; I reside at 335 East 42d Street, New York; and my  
690 occupation is that of a mechanic in general, and, in business, I am engaged with my son in the manufacture and sale of spiral spring and other mattresses and bedding material in West 27th Street, near Broadway.

Q. 2. You are called and sworn as an expert witness in this cause on the part of the complainant; and, in order to show to the Court your competency or qualifications to deliver evidence as an expert in this cause, I desire you to state whether you have ever  
691 before been examined as an expert witness in any patent cause, and, if so, state the name and give the title of such causes as you may now remember, and state generally such other matters as shall have a bearing on your qualifications to render evidence in this cause as an expert; and, as to those matters, I leave it entirely to your own judgment.

A. I commenced to act as a mechanical expert in patent cases in 1854 or 1855, and have continued ever since that time so to act in different courts of the United States: during that time I have had occasion  
692 very frequently to examine machinery in operation and at rest; to examine drawings and written and published descriptions of mechanism for the purpose of ascertaining and pointing out similarities or differences in mechanical constructions and combinations. I think the first case that I was called before the Court to explain and give my opinion upon, with reference to former constructions of the same class, was one where the validity of the Sangster Patent for improvement in hand-lanterns was in question; I think the next was  
693 the Stainthorp Candle Molding Machine Patent, on which there were several different suits, if I remember; subsequent to that I was called into several sewing-machine cases; also a case involving the validity of a patent for welding the bruised or broomed ends of railroad rails, the case being tried in Detroit, Mich., before Judge Swayne; also in a case involving the

validity of a patent for bail-buckles; another involving the validity of a patent for combination locks for safes, &c.; also, another case involving the validity of a  
 694 patent for locomotive headlights and other lamps tried in the United States Court at Utica; also a case involving the validity of a patent for a machine for folding and gumming envelopes; also in hoop-skirt cases; also in the case of the Batton Coal Breaker, tried before Judge Greer, at Philadelphia; ruffling-machine cases, and many others; I at one time acted with a Mr. Everett, of Washington, D.C., as Solicitor of Patents at the United States Patent Office, when I had occasion to examine different constructions prior to making  
 695 specifications in applications for patents. My whole life, indeed, since my boyhood, has been given to mechanical pursuits. I have made several valuable inventions myself, and obtained patents from the Government of the United States for some of them.

Q. 3. State whether you have examined the certified copy of letters-patent granted to Knibbs and Norton under date of May 24, 1864, No. 42,920, and complainant's Exhibit, C, September 25, 1878, J. A. S., Ex'r., the same being a certified copy of the letters-  
 696 patent on which this suit is founded.

A. I have, and understand the same.

Q. 4. State whether you have examined the printed record of that letters-patent found upon pp. 26, 27, 28, 29, 30, 31, 33, and 35, between folios 92 and 112 thereof.

A. I have.

Q. 5. From your examinations of that certified copy patent, and of the printed record of the letters-patent on which this suit is founded, do you so understand  
 697 the invention therein described and claimed as to enable you to give testimony concerning the same as an expert?

A. I think so.

Q. 6. Have you any doubt about it?

A. No, sir.

Q. 7. State whether you have examined any steam fire-engines in the city of New York, in use by the fire-

department of that city. If so, where, and about what time, and who were present, if anybody, during one or  
 698 more of your examinations, if you made any?

A. I have examined a number of the fire-engines used by the fire-department of New York. Early in September, or in the latter part of August, the present year, I called at the fire-department repair-shop of this city, at 130 and 132 West Third Street, formerly Amity, and, in company with Mr. James Riley, master-machinist of that shop, examined several of the fire-engines, particularly their pumping apparatus, that were there for repairs. Subsequent to that I was there  
 699 a number of times, perhaps a half-a-dozen; sometimes in company with Mr. Riley, and sometimes with Mr. James W. Orr, the chief of that department (as I was informed), examined other steam fire-engines. I also examined a fire-engine (I do not remember the number of it) in Liberty Street, east of Nassau, at the engine-house. Another at No. 132 West Tenth Street. Another in West Twenty-fifth Street, near Ninth Avenue. Another in East Fortieth Street, near Third Avenue. Another in No. 160 East Thirty-third Street, near Third  
 700 Avenue.

Q. 8. You may state the purpose you had in view in making the several examinations stated by you in your last answer, and also whether, from those examinations so made by you, you obtained knowledge of the construction of the several parts of the main or force pump, and the several devices connected therewith, and each forming a part of the steam fire-engines referred to by you, so as to enable you to give testimony concerning the same at this time.

701 A. Having been employed by the complainant in this action as a mechanical expert, I found it necessary, as I always do in similar cases, to thoroughly inform myself, first, as to what the invention is as set out in the patent at issue, and, next, to as thoroughly inform myself as to the construction, combination, and operation of the machine or thing that is claimed to infringe said patent, in order to give a correct and intelligent statement of my opinion to the Court; therefore I took

occasion, as above delineated, to visit the repair-shop  
 702 of the New York fire-department, and several of the  
 engine-houses where the steam fire-engines are kept for  
 use by the fire-department, to examine the construction  
 and operation of the pumps used in such steam fire-  
 engines for the purpose of spurling water upon fires.

Q. 9. State whether, during those examinations that  
 you say you made, you discovered any device or any  
 kind of mechanism to permit the returning of any  
 excessive water in the force or discharge part to the  
 suction or supply part of the water or main force pump  
 703 in any one or more of those engines.

A. I did in all of them.

Q. 10. You may now go on and describe the device  
 or devices you saw on those engines used for the pur-  
 pose stated in the last question and answer; and, if you  
 see on the table before this examiner any model or  
 models that will enable you to identify the invention  
 or to show the similitude or dissimilitude of the device  
 or mechanism in question, and which you say you saw  
 on those several engines, point them out and refer to  
 704 them in a definite manner, and you may make your  
 answer as broad and as full as you in your judgment  
 may think best, and you may also refer to the letters-  
 patent.

A. The invention set out in complainant's patent,  
 Exhibit C, and in the printed record commencing  
 at p. 27 and running on for a number of pages, is  
 for a mechanical means or contrivance, or combination  
 of parts of mechanism, to relieve the force or discharge  
 part of the pump which is used on steam fire-engines  
 705 or steam-engines for putting out fires when the water  
 thrown into the pressure side from the suction side of  
 the pump is in excess of that which passes off through  
 the hose or other ordinary means of discharge. This  
 is done by the inventor, Knibbs, as shown and claimed  
 in his patent, complainant's Exhibit, C, by means of a  
 tube, conduit, or waterway, having its connection or  
 ends into the force side at one end, and into the suc-  
 tion side of the pipe at the other end. In the draw-  
 ings accompanying and making part of this patent,

706 and in the model, complainant's Exhibit, J, this waterway, or relief pipe, passes round the outer cylinder, one end being on one side, and the other nearly on the opposite side; and it is secured by means of screws and packing to projecting branches of the said chambers, and the waterway is covered or closed, and opened in part or whole, by a valve over the end, entering the suction side of the pump. In the steam fire-engines of the city of New York, which I have examined as above stated, I find a waterway, or passage, one end of  
 707 which opens into the pressure or force or discharge part of the pump, and the other end opens into the receiving or suction part of the pump. I also find a valve setting down over such opening or waterway to close the same, and also being made capable of being raised up to open the same, to any extent desired. The model, complainant's Exhibit, J, I think fairly represents in this particular the identical construction described in the specifications, and illustrated in the drawings of complainant's patent, Exhibit C. I have  
 708 requested to have made, and now hold in my hand, another model, showing the suction or receiving side and the discharge or pressure side, as well as the central partition and plunger cylinder, as used by the fire-department of New York city; the ordinary valve work and outside attachments being left off, so that the court may have no difficulty in seeing the waterway and the valve controlling the same, for the relief of excessive pressure, as before stated, as the same is found in the fire-engines of the fire-department of New  
 709 York city. Now, if in connection with the description of the patent, complainant's Exhibit, C, you observe figure 1, the left-hand side of which is the force or pressure side of the pump, and the right-hand side the receiving or suction side of the same, and then observe the model, complainant's Exhibit, J, having on the suction or receiving side of the same the square box-like pipe, and if you place the *end* of that box (which has the screw-cap and the vertical spindle with milled head for controlling the relief valve over the end of  
 710 the tube) at the right-hand side of the model before

you, it will be seen there is a strong outside or face resemblance between that model and figure 1 of the drawings of the patent, complainant's Exhibit, C. The waterway having the relief valve extending from the pressure to the suction side of the pump will be observed in the model and the drawings alike. The model of the New York fire-engines' main or force pump, to which I have referred, I desire to put in evidence as a part of my answer, and request it to be  
 711 marked "Complainant's Exhibit, Model."

The exhibit is here offered in evidence by complainant's counsel; and the same is received and marked "Complainant's Exhibit, Model, October 25, 1878. J. A. S., Examiner."

Witness resumes his answer and says: —

Now, if you place the Exhibit, Model, before you, with the bulb (representing the air-chamber) which is located on the force side of the pump, and the suction side being opposite, and having a straight pipe with  
 712 threaded ends soldered to the periphery of the outer cylinder, you will observe the solid partition parallel with the straight pipe last referred to running down between the outer and the inner or plunger cylinder, which, in connection with the partition walls of the pump, divides the suction part on the right hand from the force part on the left. Now, if you remove the top and valve plate of the model, complainant's Exhibit, J, you will find almost the same identical construction in regard to the inner, or plunger cylinder, and the outer  
 713 cylinder, with the suction side divided from the force side by the partitions running down between the two cylinders, completely dividing the suction-chamber from the force-chamber of the pump; all the details of the other parts being substantially the same in purpose, though somewhat different in form, although in the model, complainant's Exhibit, J, there is no air-chamber represented. Now, on the side immediately before you, the models being placed as before stated, you will observe that the waterway in Exhibit J runs outside  
 714 of the outer cylinder around the partition, and the place of locating the relief valve is at the end of said

pipe, where it enters the suction branch or square box on the suction side of the pump, and the other end of said pipe, or waterway, is connected with the pressure or force side of the pump, at one of the hose or discharge branches, and, owing to the construction of the water-gate or plug, is always open to and into the pressure-chamber or force part of the pump. If you observe the Exhibit, Model, representing the suction  
715 and force chambers, the outer cylinder and the plunger cylinder, and the walls connecting these two cylinders, you will discover a waterway, or aperture, passing through the partition between the two cylinders which divides the suction from the force part of the pump; you will also observe a valve operated by a screw, which may be set down over that waterway, or aperture, to close the same, and which may also be raised from its seat to any desired extent, to allow the passage of water to relieve the excessive pressure, if any there  
716 should be, caused by the action of the plunger drawing water from the suction side, and forcing it into the pressure side of the pump. Now, the fact that this valve works in a horizontal instead of a vertical direction is not material, and nothing more than a mechanical change from the construction described and claimed in complainant's patent, Exhibit C. Moreover, the fact that this valve is worked against the excessive pressure rather than with it, which would be the case if it were made to operate on its seat on the opposite  
717 side of the partition and out into the suction instead of the pressure chamber, does not, in my judgment, constitute a substantially different or material modification or change; and, furthermore, the fact that in the Exhibit, Model, the waterway is shorter and more direct than that described in the patent, complainant's Exhibit, C, does not constitute any substantial difference of construction in view of the breadth of the specification and claim description, found in the complainant's patent, Exhibit C, that is to say, the inventor being  
718 the first to relieve excessive pressure in the pump of a steam fire-engine by means of a waterway, conduit, or passage leading from the pressure or force side of a



pump of a steam fire-engine into the suction or receiving side of same pump, and closing and controlling the water-flow through it by means of a valve. Wherever I find a construction that embodies the elements employed and described, without a substantial or material difference in their combination, operation, and the results of operation, the same, I can but regard the thing, or combination of parts, the same, though they may have various modifications. I also find on the table before me a model of the automatic relief valve, marked "Complainant's Exhibit, K 1, September 30, 1878," and "Complainant's Exhibit, K 2, September 30, 1878," like many of the engines which I have examined in the fire-department of the city of New York use, but not all of them, notwithstanding this valve has an automatic action by means of a spring, with screw adjustments; nevertheless, irrespective of such spring and its adjustments, it has in perfection, and almost identically, the construction and action, and, in combination with the waterway, the same purpose, the same combination of parts, and acts in the same manner, and produces the same result, that the water-passage and valve controlling the same, does, as described in complainant's patent, Exhibit C; and I further find in the case of complainant's Exhibits last referred to, K 1 and K 2, that all the functions of the valve in complainant's patent, Exhibit C, are met and performed in this valve, if you wholly exclude the construction and employment of the parts that constitute it an automatic valve; and, when it is in place as used by the fire-department of the city of New York, it is capable of being operated by the hand-wheel at the end of the spindle the same as the valve described in complainant's patent, Exhibit C, and the same as the valve found in the model, complainant's Exhibit, J, without any regard to the automatic part.

Q. 11. State whether, during the examinations you made among the steam fire-engines in use by the fire-department of the city of New York, you found any that did not have this automatic mechanism shown by complainant's Exhibits, K 1 and K 2.

A. I did.

Q. 12. How many?

A. Two.

Q. 13. Did you find any kind of a relief valve used in connection with the waterway or passage conduit, connecting the force or pressure chamber and the suction or supply chamber, in use on those engines?

A. I did.

Q. 14. You may now proceed to describe the device referred to in the last question and answer; and, for that purpose, you may refer to the patent in suit, or to any model or models now before you on Examiner's table as exhibits in this cause, and you may also refer to any paper exhibit in this cause that you may deem necessary to enable you to give a full and correct answer to this question. I also desire you to state the name, names, or number of the steam fire-engines last above referred to by you, which you say you saw in the fire-department of the city of New York.

Adjourned to Saturday, October 26, 1878, at 10.30 A.M.

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NEW YORK, October 26, 1878,  
10.30 o'clock A.M.

Met pursuant to adjournment.

725 Present — Counsel as before.

*Examination of SAMUEL P. KITTLE continued.*

Defendant's counsel objects to the foregoing question, and all others to this witness, and to his answers to the same as far as they relate to inspection or use of devices since the filing of the bill in this case, as incompetent and immaterial.

A. I found in West Twenty-fifth Street, near Ninth Avenue, in one of the engine-houses of the fire-department of the city of New York, one of the Smith or Gould make of engines: I think it is known in the department as No. 5 Battalion engine. That steam fire-engine, and another one by the same maker, as I understand, known as No. 8 Battalion, which is gener-

ally housed at No. 160 East Thirty-third Street (No. 5 is generally housed at No. 132 West Tenth Street, as I understand), both of them are liable to be called to any part of the city, or particularly any part of the fire-battalion to which they belong, in case of a dis-

727 abling of the regular engines in service: these are reserve engines, and I understand there is another of the same make on one of the islands, Blackwell's or Randall's, in regular use. The pumps in these two engines which I have referred to, No. 5 and No. 8 Battalion, and which I saw, have their pumps worked in a horizontal instead of a vertical direction, and have the discharge and suction parts, or chambers of their pumps, connected by a pipe, or water-passage, leading from the pressure to the suction parts or chamber, and on the

728 outside, like that shown in the model, complainant's Exhibit, J, and illustrated by the drawing in complainant's patent, Exhibit C. This waterway, or pipe, is provided with a valve worked by spindle and screw, with a handle the same as that found in the model, complainant's Exhibit, J, and the same as that illustrated in the drawings, and described in the patent, complainant's Exhibit, C. I will state, however, that in the case of the No. 5 Battalion engine, that I found this relief pipe and valve in duplication, one on the right hand

729 and one on the left of the pump; and, furthermore, that the valves employed on these engines to open and close the waterway, or pipe, running from the discharge to the suction side or chamber of the pump was located so, that, in opening the waterway under pressure in the discharge side of the pump, these valves lifted against that pressure, or, in other words, when raised from their seat at the end of the waterway, or connecting pipe of the two chambers, they raised and worked in the pressure or discharge chamber, or side

730 of the pump, instead of working or moving in the suction or receiving side, or chamber of the pump, as is the case in the model, complainant's Exhibit, J, and also in the patent, complainant's Exhibit, C, as there described and illustrated. This change of construction and operation seemed to me to be nothing more than formal or mechanical, and not material.

Q. 15. Were you present during the examinations of James Riley, called as a witness on the part of the complainant, sworn and examined on or about October 731 1, 1878, and also of the complainant's witness, Gilbert J. Orr, called, sworn, and examined as a witness on the part and behalf of the complainant in this cause?

A. I was.

Q. 16. State whether you heard Mr. Orr testify about engines which he called the Smith and Gould build of engines.

A. I did.

Q. 17. Do you remember what kind of relief valve he testified to as being upon the Smith and Gould 732 build of engines? and, if you do, state the same.

A. I do: he said they had the hand relief valve, the same that I have described.

Q. 18. State whether the steam fire-engines referred to and described by you in your answer to Q. 14 were the same steam fire-engines referred to by Mr. Orr in his testimony about which I have just made inquiries of you in the last previous questions?

A. They were: at least two of the four that he spoke of in his testimony containing the hand relief 733 valve, as I understand it.

Q. 19. Previous to your going to examine these engines in the manner and for the purposes that you have already stated, did you have permission from anybody, verbal or in writing, to allow you to visit the houses where those engines were, and to make such examinations of them as you might deem best?

A. I had a letter from Mr. Orr, which I now hold in my hand, introducing me, and requesting the parties in charge to allow me to see the engines, and to give 734 me any information I required.

Q. 20. If you have no objections, I desire you to produce that letter in answer to this question, that it may be filed and marked as an exhibit on the part of the complainant; and I now ask you if you are willing to comply with the request contained in this question?

A. I know of no reason why I should not, though I had no idea that the letter would be called for such purpose when I obtained it.

Witness hands the letter to the examiner; and it is  
 735 marked "Complainant's Exhibit, N, October 26, 1878,  
 J. A. S., Ex'r."

Q. 21. I now ask you to take complainant's Exhibit, J, September 30, 1878, also complainant's Exhibit, K and K, No. 2, September 30, 1878, and also complainant's Exhibit, Model, October 25, 1878, and compare them with the letters-patent in this suit marked "Complainant's Exhibit, C, September 25, 1878," and state the similarity, or difference, if any, between the same; and, in making your answer, I desire you to take  
 736 into consideration the several parts represented by each, as well as the combination of those several parts and the purposes for which they were or are intended, as well also as the functions performed by each during the operation of a steam fire-engine for throwing water upon burning buildings, or other structures on fire; and you may also state what the invention is, set out in the patent to which I refer.

A. It appears Mr. James Knibbs had his mind called to a necessity for an improvement in pumps  
 737 used for spurting water on fires, which arose into importance on the introduction of the steam fire-engine, at which time it would seem that the construction of steam fire-engines was such that the suction part of the pumps used was capable of discharging into the pressure part of said pumps a large amount of water, sufficient, in some cases, to afford four or five streams through the hose and hose pipes and nozzles; and it appears also that it became necessary, in the employment of these steam fire-engine pumps, to suddenly  
 738 shut off one, two, or more of these streams at the nozzle or pipe by the man in control thereof, which was not unfrequently at considerable distance from the steam fire-engine and its engineer. When such part of the discharging water from the pressure side of the pump took place, the engineer was notified of such shutting off of the discharge, evidently by the labor of the steam-engine, in which, if the pressure of steam were sufficient, it drove right on, sometimes bursting the hose, sometimes straining the pump, sometimes

739 straining the engine, and sometimes (where the engine boiler was fed from the pressure side of the pump) forcing water into the boiler against the steam pressure, varying sufficient to flood the same.

It appears that these evils were in part remedied by a waste valve on the pressure side of the engine, which was opened, allowing the water to flow into the street, or the hose was allowed to let the water run. This waste of water in the street, however, was not unfrequently damaging, and very detrimental; and the relief  
 740 thus found was inadequate, and not satisfactory. The inventor, Knibbs, conceived the plan of affording relief from the difficulties above cited, as he sets them forth, and as he describes his plans and means of relief in his patent, a certified copy of which is complainant's Exhibit, C, which is, introducing a pipe into the pressure or discharge side of a fire-engine pump, at one end, the other end of which he introduces into the suction or receiving part of the same pump, thus affording a waterway, or run-round water-passage, from  
 741 the pressure side to the suction side of a pump of a steam fire-engine. This waterway he closed with a valve operated by a spindle and screw and handle, so that the engineer could work it and raise the valve readily off its seat or close it down, as the necessity or the pressure in the discharge part of the pump should require. I conceive that to be the invention set out in the patent, complainant's Exhibit, C. The inventor says (after rehearsing the difficulties and drawbacks in the use of a steam fire-engine): "By my said inven-  
 742 tion, or improvement, all these difficulties are fully obviated. The force part or section of said pump, being connected to and with the suction or supply part or section in the manner and by the means substantially as herein described and set forth, no discharge-pipe or water-valve is required to be opened during the operation of the engine throwing one or two streams of water at one operation or stroke of the piston. The extra quantity of water thrown into the force or discharge part or section of the pump from the suction or  
 743 supply part, or section, and not discharged through the

discharge or hose pipe connected therewith, because the same are closed, with one or more exceptions, is conducted by means as hereinafter described from the said force part or section of the pump back into the supply or suction tube or pipe connected to and with the said suction or supply part or section of the said pump, and thus the force or discharge part or section of the pump is relieved, &c.," down to these words, "the said pump will throw one, two, three, four, or  
744 more streams of water at the same time, the same being regulated by means of a valve hereinafter described and set forth." Now, as I have said before, it may be seen at a glance, by reference to the drawings, figure 1 of the patent, the right-hand side of the same representing the suction side of the pump, and the left-hand the discharge side, the letter G showing the pipe, or waterway, running from a branch on the pressure or discharge to a branch on the suction or receiving side; the model, complainant's Exhibit, J, when placed before  
745 the observer, with the suction side on the right, will present the same device or water-pipe that is marked G in the drawing, connected to a branch on the pressure side of the pump, and terminating in a branch on the suction side of the pump. Now, if the cap on the suction side of the pump be removed from the model, and the valve and spindle with its connections and hand-wheel at the top be observed, the identity of the parts will be clear to any one. I call attention to this fact here, that the valve in the drawings and in the  
746 model lifts up from or off or away from the pressure in the discharge side of the pump; and I call attention to the further fact, that the pipe G, or waterway, from the pressure to the suction part or side of the pump has its ends in branches instead of the main or outer cylinder or body of the pump; and also to this other fact, that the waterway, instead of passing directly through the inside partition or walls dividing the pressure from the suction part of the pump, passes around the outer wall, connecting on the branches as before stated. By  
747 looking at the model, complainant's Exhibit, Model, with the bulb and valve spindle and handle being on

the left, and the straight pipe running off at a tangent from the shell or outer cylinder of the pump on the right, it will be observed that there is a waterway, or passage, communicating with the pressure and suction side of the pump-barrel represented in that exhibit, which runs through the partition wall, which wall connects the outer cylinder with the plunger cylinder. The difference in the waterway is a difference of location and of length chiefly, which are not material in my opinion: it is a waterway or passage, hole or aperture, that, when open, will operate precisely the same, and is for exactly the same purpose, and passes through the wall of the outer wall or shell of the pressure side of the pump, and the wall or shell of the suction side of the pump, as found in the partition, instead of the semi-circular periphery of these chambers, or the branches making a part of the same. This aperture in the partition of the model, complainant's Exhibit, 748 Model, is for relieving excessive pressure which occurs under precisely the conditions described in the patent, complainant's Exhibit, C, as I have before stated, and as are rehearsed in the quotations given. It operates in allowing the passage of water from the pressure side of the pump to flow through it to the suction side of the pump, precisely the same and for the same purpose as that described in the patent, complainant's Exhibit, C. In the model, complainant's Exhibit, Model, the valve is secured to the end of a screw-spindle and operated by the little wheel-handle, and is substantially 750 identical with the valve-screw, spindle, and wheel-handle found in the model, complainant's Exhibit, J, and the same as described and illustrated in the patent, complainant's Exhibit, C; but in the model, complainant's Exhibit, Model, the valve and spindle are operated at right angles with the plunger or cylinder of the pump. This I regard as only a mechanical change. The branch, or projecting part, into and through which the valve operates is located on the pressure or discharge side of the pump, and has its seat on the pressure end of the waterway. This I do not regard as 751 material in view of the breadth of the description and



claims found in the patent, complainant's Exhibit, C. I quote from that Exhibit "(H) is the valve to regulate the excessive quantity of water to be returned from the force section through the said tube G G, to the said suction or supply pipe B." "If all the hose-pipes are discharging water at the same time, this valve will remain closed; if, however, but one, two, or three  
 752 of the discharge-hose are discharging water at the same time or stroke of the pump, then this valve must be opened sufficient to allow the return of the excessive quantity of water which cannot be discharged, &c."

In the specifications of the second claim I find, after the words "section thereof," "by means of the tube G G, and the regulating valve (H), or any equivalent therefor, substantially as and for the purposes herein described and set forth."

753 It seems to me that any valve used in connection with the last described waterway, or a waterway for the passage of water to relieve the excessive pressure of the force side of a steam fire-engine pump, is the valve set out and described in the patent, complainant's Exhibit, C, and I cannot regard the location or shape of that valve as material so long as it operates to open and close such a waterway; neither is the line or direction of its operation material, in my opinion, so long as it is adapted to the waterway in such a way as  
 754 to effectually and practically open and close the same as required or set forth and described in the patent, complainant's Exhibit, C.

I find, in case of complainant's Exhibit, K, and K 2, of September 30, 1878, an automatically acting valve, such as is used on most of the steam fire-engines of the city of New York. It will be observed that the valve is secured on to the end of a spindle which enters through the cylinder or shell of the pump, and at the opposite end of the said spindle there is fastened a  
 755 hand-wheel, and the same may be, and is, operated by a thread on the spindle acting into another thread on the extreme outer or handle rim of the automatic or spring-barrel case. Without stopping to describe

which, as it can be easily seen by taking it apart, — I mean the construction of the automatic part of this valve, — we will simply suppose the outer band with the four knobs, and having the right and left hand threads screwed up to the corresponding parts as tightly as possible, and then the valve or spindle-support being

756 screwed on to the projection on the outer cylinder of a steam fire-engine pump, which is fairly represented by the projection on the pressure side of the model, complainant's Exhibit, Model, the screw on the end towards the valve screwing into such projection, — the valve taking its seat at the end of the aperture, or water passageway, as seen and before described in said model, complainant's Exhibit, Model. This valve, in complainant's Exhibit, K and K 2, just described by me, is capable of the same operation and hand manipula-

757 tion as the valve before described by me in the model, complainant's Exhibit, Model, and the same as that in the model, complainant's Exhibit, J, and that described in the patent, complainant's Exhibit, C. The valve in complainant's Exhibit, K and K 2, September 30, 1878, is substantially identical with that found in the models, — complainant's Exhibit, J, and complainant's Exhibit, Model, and described and illustrated in the patent, complainant's Exhibit, C. The same is true of the spindle on to which the valve is secured, and which

758 has a handle to operate the same by, and which is operated through the agency of a screw; that is to say, the purpose of each of these valves is to close and open a waterway, or passage, from the pressure to the suction side of a steam fire-engine pump. Each one of them has a spindle on to which the valve is secured; each one of them has a screw on its spindle, so that when it is turned round, it will raise or lower the valve; each one of them has a handle or hand-wheel to operate the spindle, and raise or lower the valve by turning it around

759 for the purpose of opening or closing the waterway, with which the valve is connected, and which waterway communicates with the force or pressure side and the receiving or suction side of a steam fire-engine pump; and in all these essential particulars they are substan-

tially alike or identical; they are made for the same purpose, they operate in the same manner, and they produce the same result; and the fact that they may act in a different line or at a different point or direction, as regards the waterway, or the force or pressure, does not, in my opinion, constitute any materiality or substantial change; neither does the fact that there is attached to one of them, to wit, complainant's Exhibit, K 1 and K 2, some modifications in parts and additions to constitute the valve, under certain conditions, automatic in its action; nor does the fact that the valve is operated in the pressure chamber or side, instead of the suction or supply chamber or side, make any substantial or material difference in view of the facts already stated by me as above.

761 Q. 22. I now desire you to take into consideration the facts stated by you concerning the examinations which you say were made by you of steam fire-engines now in use in the fire-department of the city of New York, *namely*, that you saw steam fire-engines having thereon for use a "hand relief valve" as well as an automatic relief valve like complainant's Exhibit, K and K 2, September 30, 1878; also steam fire-engines having thereon for use a pipe or tube water passageway, with "hand relief valve," in use in connection or  
762 combination with that water passageway, and like, or substantially like, those contained in complainant's Exhibit, J, September 30, 1878, as stated by you, and thereupon state whether the conditions and statements of facts contained in your answer to the last question apply to those several steam fire-engines so examined by you, and, if they do not, state wherein and why not.

A. Why certainly, *all* the steam fire-engines which I examined had the valve, as I think I have said before, represented by the model, complainant's Exhibit, K  
763 and K 2, which is in full size on them, and operated with the water-passage through the partition as represented in the model, complainant's Exhibit, M, with the *exception* of the two engines which I particularly described as having the hand relief valves and the outside waterway almost identical with that shown in com-

- plainant's Exhibit, J, where the fire-engine pumps have the automatic relief valve like complainant's Exhibit, K and K 2; and in all cases that I examined they could be used the same as hand relief valves by simply
- 764 screwing down the spring solid, so that the power would be greater than the force of pressure in the discharge-chamber of the pump; that is to say, they were all capable of an adjustment that would necessitate using them as hand relief valves; moreover, suppose the spring pressure of the automatic valve were set at four hundred pounds the square inch, and the pump and engine were being used so that there was required but three hundred pounds to the square inch in the force side of the pump, and some of the hose or
- 765 delivery pipes should be shut off, of course the automatic feature of the valve would have no value whatever, neither would the pressure be relieved only by operating the relief valve by hand, which could be done just as readily by the engineer as it could in the case of a pump constructed specifically, according to the drawings and description of the patent, or like complainant's Exhibit, J, or like the two Battalion engines of which I have spoken, of the Smith or Gould build.
- 766 Q. 23. State whether, in the relief valve contained in complainant's Exhibit, J, September 30, 1878, the flow of water under pressure is, or is not, regulated in the quantity discharged from the pressure or force chamber back into the suction or supply chamber, by means of a valve on one end of a spindle, and an operating wheel upon the opposite end, and the whole device of valve, of spindle, and of wheel, are moved by hand, and supported in proper place by means of male and female screw?
- 767 A. Yes; that is a fact.
- Q. 24. By what means, if any, is the flow of water under pressure from the force or discharge chamber to the suction or supply chamber regulated in complainant's Exhibit, K and K 2, and in steam fire-engines which you saw and examined in the fire-department of the city of New York?

A. By a valve on the end of a spindle, which valve sets over the pressure end of a waterway, which waterway extends from the pressure side to the suction side of a steam fire engine pump, and the valve is raised or lowered by means of the threads of screws interlocking, by the application of hand-power to a hand-wheel, located on the end of the spindle opposite the valve; this is not the case, however, always, as I have before explained.

Adjourned to Monday, October 28th inst., at 1 P.M.

769

NEW YORK, October 28, 1878,  
1 o'clock P.M.

Met pursuant to adjournment.

Present — Counsel as before.

Direct examination of the witness, Samuel P. Kittle, resumed.

Q. 25. What do you wish the Court to understand when you say, "this is not the case, however, always, as I have before explained"?

770 A. That the relief valve was not always operated by the hand-wheel in all the fire-engines which I examined belonging to the fire-department of the city of New York; most of said engines had fixed on the pressure side of the pumps an automatic mechanism to operate the relief valve, substantially like the relief valve which I have before described; under certain circumstances that automatic mechanism will operate the relief valve when under pressure.

771 Q. 26. Then I understand you to say, substantially, that, in the complainant's patent in suit, the relief valve is securely fastened to one end of a spindle, having a screw-thread on some part of it, while on the end opposite to that of the valve which is secured to said spindle, there is a hand-wheel securely fastened, by which the valve is opened and closed upon the end of the waterway you have described, and that, in complainant's Exhibit, K and K 2, September 30, 1878, is

also found the same devices and arrangement thereof, excluding, of course, the automatic mechanism: am I  
 772 correct in this?

A. Yes; excepting that the part into which the screw on the spindle takes in the case of complainant's Exhibit, K and K 2, is the outer part or end of the automatic mechanism, as before described, instead of the firm part or screw into which the spindle operates in complainant's patent, which I do not regard as material or substantial, but simply a mechanical change under the circumstances I before described.

Q. 27. In your opinion, what advantage, if any,  
 773 is there in the employment or use of the automatic mechanism for operating the "relief valve" as found in complainant's Exhibits, K and K 2, September 30, 1878, over the "hand relief valve," as specifically set forth or described in the letters-patent in suit, represented by complainant's Exhibit, C, September 30, 1878, and about which you have given testimony on this examination, and also shown in complainant's Exhibit, Model, October 25, 1878?

A. If the engineer in charge of the steam fire-engine  
 774 attends strictly and watchfully to his business, with the hand relief valve referred to in the question, and to the pressure gauge of the force part of the pump, there would be no advantage; however, the spring pressure being adjusted in the automatic mechanism to a given pressure, it would operate the valve under that pressure without the special attention of the engineer to that part of his work, until such time as the circumstances should require a change in the tension of the spring, to adapt it to less or more water  
 775 pressure in the force side of the pump that might be required, which would occur in case of the steam-power pressure running down so low that the pump could not be worked under said given pressure, when the tension of the spring would have to be relieved by a change in the automatic mechanism; and again, should the strength of the hose be found less than the pressure at which the automatic valve was set could bear; and again, the hose being strong enough to resist increased

pressure, it might be desirable at a fire to spurt the  
 776 water further, when the automatic mechanism would  
 have to be changed to resist an increased pressure;  
 again, should it be desired to change the length of  
 hose through which the water was being forced, which  
 would require greater water pressure, and that would  
 necessitate a change in the automatic mechanism, giv-  
 ing a greater tension on the spring; and again, were it  
 desirable, under the increased extent of hose through  
 which water was being forced, to spurt the water with  
 greater force, the tension on the spring working the  
 777 automatic mechanism would have to be increased.  
 Most of these variations could also be modified again  
 by the steam pressure in fire-engine, and the conse-  
 quent rapidity of the working of the pump.

Q. 28. What, in your opinion, if any, is the value  
 of the invention specified, described, and claimed in  
 the complainant's patent in suit, represented by Ex-  
 hibit C, September 30, 1868, and as applied to, and  
 used upon, steam fire-engines in the extinguishment of  
 fires?

778 Objected to as incompetent.

A. I think it a valuable invention.

*Cross-examined by* FREDERIC H. BETTS, Esq.

× Q. 29. Do I understand you to say that you  
 understand the invention described and claimed in the  
 patent of Knibbs and Norton, No. 42,920, on which  
 this suit is brought?

A. Yes.

Q. 30. What do you understand to be the inven-  
 779 tion described in the first claim of said patent? Do you  
 regard it as an invention consisting of mechanical ele-  
 ments, or as a claim for the returning of any excessive  
 water in the force part of the pump to the suction part  
 by any mechanical means?

A. It is the operation of combined elements set  
 forth when operated in the manner and for the purpose  
 described; to wit, the returning of excessive water  
 from the force side to the suction side of a steam fire-  
 engine pump, whereby the pressure side is relieved  
 780 from excessive pressure.

× Q. 31. Then, do I understand you to mean that the invention described in this first claim is the operation of certain mechanical elements, and not the elements themselves?

A. Yes; that is to say, it is the combined harmonious working whereby the result is attained.

× Q. 32. Suppose the same result was obtained by substantially different mechanical contrivances, would you regard that as included under the invention described in said first claim?

A. I think I should not.

× Q. 33. But you do regard the invention described in said first claim as the result of the use of the contrivances specified in the patent?

A. Of the operation and arrangement of the parts in producing the result.

× Q. 24. Do you mean, that, in your opinion, the invention described in said first claim is the result of the operation and arrangement of the mechanical parts specified in the patent?

A. I mean it is the operation of the parts and the combination of parts in returning excessive water pressure from the force section of a steam fire-engine pump to the suction part of the same pump.

× Q. 35. Do you regard the invention described in the second claim, commencing with the words "I also claim," as a mechanical combination?

A. Yes.

× Q. 36. Please specify what particular mechanical elements are the mechanical elements of the combination described in said second claim. Mention all of them in your answer, and refer to them by the letters by which they are designated in the drawings.

Objected to as being improper, incompetent, and immaterial, as the claim itself referred to in the question, being found in the original patent in suit, is a full answer to the question, and therefore is the higher and better evidence.

Second, If examining counsel will, by some question, call the attention of the witness to the equivalent of those devices which he has named as specified and



claimed in the claim under inquiry, no objection will be taken to a question of that kind, although this court is competent to judge for itself of the devices contained in the patent, as well also as any equivalents therefor.

A. Having a steam fire-engine pump with a suction and force side or chamber, a waterway G G extending from the force to the suction side, and a valve H to  
 785 control the passage of water through it, which valve H must be provided with some means of operating it successfully, for the purpose of regulating the same to relieve excessive pressure in the force side of said pump, as desired.

× Q. 37. Do you regard the invention described in said second claim as limited to a steam fire-engine? or does it include other forms of engine-pumps?

A. If strictly constructed, I think possibly it might be confined to a steam fire-engine pump, or a pump  
 786 used to throw water on fires.

× Q. 38. What do you understand by the words, "or other engine-pump," in said second claim?

A. It is my impression the inventor meant like pumps being driven by other engines beside fire-engines; that is to say, he did not mean to confine himself to an engine on wheels, such as is used in the fire-department; but that his improvements might be used in pumps for putting out fires on shipboard, and at factories operated by steam-engines that were sta-  
 787 tionary.

× Q. 39. Suppose an engine-pump should be used for an entirely different purpose from that of putting out fires, but should have its suction and discharge sections connected by means of a tube, and the flow of any excessive water from the discharge part controlled by means of a valve in said tube; would you regard that as embodying the invention described in said second claim?

A. From the reading of the specifications of the  
 788 patent, complainant's Exhibit, C, it seems to me that the inventor had in view the employment of his invention in pumps for the purpose of putting out fires;

nevertheless, by a broad and liberal construction, it probably might be considered as extending to the suppositious case in the question.

× Q. 40. I am not asking you what the inventor intended, or what you think he intended ; but whether, in your opinion, it would be the same invention if the force and suction parts of a pump were connected by a  
789 tube, or waterway, and such tube, or waterway, was provided with a regulating valve, to whatever purpose the pump was put ?

A. Excluding the specification found in the patent, complainant's Exhibit, C, and its limitations, as an abstract proposition, I think it would be the same thing wherever found in substantially the same kind of pump. The fact that the pump was not used to put out fires, and still required the waterway and relief valve the same as such a pump does require, would be only putting  
790 the same thing to another use.

× Q. 41. You use the phrase in the last answer "in substantially the same kind of pump." Do you mean by that any thing more than the pump must have a suction part and a discharge part and a plunger ?

A. No.

× Q. 42. Then I do understand you to say that you understand this invention to be, when considered apart from the particular uses specified in the specification, a pump having a discharge part and suction part  
791 and valve and plunger, the suction and discharge part being connected by a tube, or waterway, which is provided with a valve for opening and closing the same ?

A. I understand the invention to be connecting the pressure or force chamber, or part of a fire-engine pump, by means of a waterway or tube to the suction or receiving chamber, or part of the same pump ; said waterway or tube having a regulating valve, with means for operating the same readily, to admit the flow of water under excessive pressure in the pressure part  
792 or chamber, through such waterway and under such valve, back into the suction or receiving chamber of such a pump ; subject, however, to any mechanical modification or change, which is common among me-

chanics or constructors, in building similar mechanism or machines.

× Q. 43. (Question repeated.)

A. I described what I understand the invention to be in my last answer. I now understand you wished me to exclude, in this answer, the uses which the  
 793 inventor specifies to employ his invention at, and to consider the construction in pumps not used for putting out fires, but for some other purpose. I will simply say that would be only another use; the construction and operation and arrangement or combination being the same, the thing, contrivance, or machine would be the same.

× Q. 44. What do you regard as the essential parts of the pump which are included in the combination described in said second claim? Is it any thing more  
 794 than the suction and discharge sections and the plunger?

A. Yes: I think so.

× Q. 45. What other parts?

A. It is a pump having proper valves, a proper plunger with rod and connection for working the plunger cylinder, a suction or receiving chamber or part, with branches for connecting pipe or hose to communicate with water-supply, the usual pressure-chamber and air-chamber, and with branches connected thereto and forming a part of the pressure side for the connection of hose or discharge pipe or pipes and the usual  
 795 gates. That is to say, the well-known suction and force pump having the suction and force chambers.

× Q. 46. Do you regard the presence of an "air-chamber" and "gates" as essential, or could a pump without these features be made to embrace the invention by connecting the discharge and suction parts by a waterway, and providing the waterway with a regulating valve?

A. The invention, as set out in the patent, complainant's Exhibit, C, is employed in and combined in  
 796 such a pump as I have described in my last answer. The waterway and regulating valve could doubtless be used on a different pump, and one not having several branches for hose connection; but I think there would

have to be some waste-gate or water-passages or pipes for discharging water from the pressure side, and probably an air-chamber for elastic action in the pressure part or chamber to make a successful or useful pump, and one where the waterway and regulating valve would be of any use, and so as to embrace the invention set out in the patent, complainant's Exhibit, C, under any circumstances.

× Q. 47. Would it not be the same invention recited in the second claim if the suction and discharge parts of any known form of suction and force pump were connected by a waterway provided with a regulating valve?

A. I think not necessarily.

× Q. 48. Why not? Why wouldn't it be the same invention?

A. The inventor described what kind of a pump in his specifications, and illustrates in his drawings the same kind of pump, and shows the purposes and parts of such pump, and the necessity for the invention in such pump, and tells what his invention is, how it is constructed and applied to such pump, and to what class of pumps it is applicable, and describes the parts, the combination of parts, and the elements of his invention, how they operate, and the result they produce in the specified class of pumps to which his invention is adapted. I have no doubt but what the elements of his invention, to wit, the pipe, or waterway, the valve H, might be applied to some other class or classes of pumps; but with what effect, operation, or result I do not pretend to state.

× Q. 49. Suppose the waterway and valve were applied to some other known form of force and suction pump, or suction and discharge pump, so as to connect the discharge and suction parts, would you regard it as a substantially different invention?

A. I would. However, I would like to see the suction and *force* pump before declaring positively that it might not contain the same invention, and yet be used for another purpose and of another class.

× Q. 50. Do you think that after such a water-

way and valve had been applied to any one known form of pump, so as to connect the discharge and suction parts, it would require any invention to apply it to the same purpose to any other known form of pump?

801 A. It probably would. I would like to see an illustration of its application to any form of *force* pump.

× Q. 51. After such a waterway and valve had been applied to any one known form of pump, so as to connect the suction and discharge parts, do you not think that any person skilled in the manufacture of pumps could, from his ordinary knowledge, apply such a waterway and valve to any other known form of pump?

A. No.

802 × Q. 52. Why not?

A. Because the conditions would doubtless change as the form or style of pump changed; and because I know that skilled manufacturers and artisans commonly run along in what might be termed a beaten track in manufacturing machinery and other things, and improvements in any branch of manufacture is more indebted to happy thoughts or conceptions that take the form of invention than it is to the skill in the workman; and, furthermore, I am satisfied that there  
803 is no necessary suggestion of the invention in question to be found in a simple conduit running from the discharge part of an ordinary pump back to the suction connections or part of the same that would enable a builder of steam fire-engine pumps to produce the invention, with its combination of parts, for the relief of excessive pressure in the force part or chamber of such a pump connecting it with the suction part of the same pump, so as to relieve the pressure-chamber with the connecting pipes in the manner that the inventor has  
804 done and shown in the patent, complainant's Exhibit, C, September 30, 1878.

× Q. 53. What advantage, if any, is there in causing the excessive water to be returned into the suction-chamber of the pump itself from what would exist if the excessive water were returned into the source of supply outside the pump?

A. The advantage of having a perfect construction and absolute certainty of the necessary relief in the pump itself, and not dependent on any outside circumstances which are liable to vary at every time the pump is used, and to be more or less difficult to carry out, if not impossible or complicated. I think it a great and valuable advantage.

Adjourned to Tuesday, October 29, 1878, at 3 P.M.

NEW YORK, October 29, 1878,  
3 o'clock P.M.

806

Met pursuant to adjournment.

Present — Counsel as before.

Defendants' counsel announces that he has no further questions to ask this witness.

*Re-direct Examination.*

R. D. 54. Have you, since the close of the examination on yesterday, read over and examined the testimony you rendered during your cross-examination of yesterday?

A. I have.

R. D. 55. State whether, after such reading and examination, you desire to make any corrections in that evidence, and, should you answer affirmatively, go on and make such corrections as in your judgment you deem best to make.

A. I desire to add to my answer to X Q. 39, to wit: "*returning water from the force to the suction-chamber to relieve the excessive pressure in the force-chamber.*" Also in my answer to X Q. 41, insert "*yes*" instead of "*no*." I would further like to add to my answer to X Q. 45, "*such as are used for spurting several streams of water on fires.*" And add to my answer to X Q. 48, "*it might or might not be what is described in the patent, complainant's Exhibit, C.*"

R. D. 56. Is there any thing in your examination-

in-chief of matters and things about which you have testified that you desire in any way to change, alter, or  
 809 modify? and, if there be, you may now make the same in answer to this question.

A. I have not discovered any thing that I care to change, alter, or modify in my examination-in-chief.

SAMUEL P. KITTLE.

Subscribed and sworn to before {  
 me, this October 29, 1878 }

JOHN A. SHIELDS,  
*Examiner, &c.*

810 Adjourned to Wednesday, October 30, 1878, at 11.30 A.M., at the office of the examiner.

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NEW YORK, October 30, 1878,  
 11.30 A.M.

Pursuant to adjournment.

Present — Counsel as before.

811 Joseph L. Perley, a witness produced on the part of the complainant, being first duly sworn, testifies as follows: —

Q. 1. What is your name, age, residence, and occupation?

A. Joseph L. Perley; aged forty-two years; I reside 716 Lexington Avenue; I am fire commissioner of the city of New York.

Q. 2. How many fire commissioners has the city of New York?

812 A. Three.

Q. 3. You may state the names of each of them, and the manner in which they are appointed to office.

A. Vincent C. King, John J. Gorman, and myself: they are appointed by the Mayor, and confirmed by the Common Council.

Q. 4. State, if you please, generally, the duties of the fire commissioners.

A. They have a general supervision and management of the fire-department of the city of New York.

813 Q. 5. State whether that includes steam fire-engines used in that department as well as other fire apparatus.

A. It includes engines, horses, and every thing pertaining to the extinguishing of fires.

Q. 6. If you know, you may state the number of steam fire-engines now in use in the fire-department of the city of New York; and, if you do not know the exact number, you may approximate the same.

A. There are forty-two land engines, and one floating engine used on water; there are also several spare  
814 engines, the number of which I do not know.

Q. 7. About how long have these several steam fire-engines been in use in the fire-department in the city of New York?

A. About eighteen years; and there have been new ones furnished since, and others repaired, altered, and rebuilt.

Q. 8. Who, if you know, is the owner of these several steam fire-engines used in the fire-department of the city of New York?

815 Objected to on the ground that the law defines the ownership of the property used in the fire-department.

A. I should judge the citizens and tax-payers.

Q. 9. The citizens and tax-payers of what city?

A. Of the city of New York.

Q. 10. Of whom, and about when, were any one or more of those steam fire-engines purchased?

A. From the Amoskeag Manufacturing Company, of Manchester, N.H. About three years ago four of them were purchased.

816 Q. 11. Has there been any purchased since that time, for use in the fire-department of the city of New York?

A. Not to my recollection.

Q. 12. If you know, I desire you to state who purchased those steam fire-engines last mentioned by you, and used in the fire-department of the city of New York.

A. They were purchased by the fire commissioners, who advertised for proposals, in accordance with the  
817 laws of the State.



Q. 13. For whom and for what purpose did the fire commissioners purchase those fire-engines last referred to by you?

Objected to upon the ground that the statute defines the purposes for which the fire commissioners purchase property.

A. For the fire-department of the city of New York, for the purpose of extinguishing fires in the city of New York.

818 Q. 14. State, if you know, who paid for those engines.

Objected to on the ground that the statute provides the method in which payment shall be made for articles to be used in the fire-department.

A. I don't know that they have ever been paid for.

Q. 15. Who furnishes the money for carrying on the business of the fire-department of the city of New York?

819 Same objection.

A. I should judge the tax-payers.

Q. 16. Do you refer to the tax-payers of the city of Troy, Albany, Buffalo, or any of the other large cities in the State, in your answer to the last question?

A. I refer to the tax-payers of the city of New York only.

Q. 17. Into whose hands do the tax-payers of the city of New York place their money used for operating at fires the steam fire-engines you have named, and the other business of that department of which you are one of the fire commissioners?

820

Objected to on the ground that the matter inquired of is fixed and determined by statute, and not a proper subject for oral testimony.

A. I should judge they place it in the hands of the receiver of taxes, and the disbursements are made by the finance department of the city of New York.

Q. 18. Of whom do the fire commissioners obtain means or money for carrying on the business of the fire-department of the city of New York?

821

Same objection.

A. It comes from the finance department, the only disbursing department of the city of New York.

Q. 19. Who is at the head of that department, if you know?

A. John Kelly, comptroller.

Q. 20. State, if you know, whether the city of New York is the owner of any steam fire-engines that are  
822 now in use in the fire-department of that city.

Objected to on the ground that the question of ownership is one fixed and determined by statute, and the question is therefore incompetent.

A. I should judge they own all of them.

Answer objected to for the same cause.

Q. 21. Are any of those engines which you have named, or any other steam fire-engines now in use in the city of New York, owned by or the property of the fire-department of the city of New York? I mean in-  
823 dependent of the city of New York?

Same objection.

A. The fire-department of the city of New York is a body of men, and do not own any thing in the shape of public property.

Q. 22. Then, those body of men, which you call the fire-department of the city of New York, do not own the steam fire-engines referred to by you, do they?

Same objection.

A. They do not.

824 Q. 23. And they do not pay the expenses of operating those engines for the extinguishment of fires in the city of New York, do they?

Same objection.

A. They do not.

Q. 24. Who owns and occupies the repair-shops of the fire-department of the city of New York, if you know?

Same objection.

A. The city of New York or its tax-payers.

825 Same objection.

Q. 25. The steam fire-engines owned by the city of New York are repaired, altered, or re-built in those shops, are they not?

Same objection.

A. They are.

Q. 26. The fire commissioners of the city of New York have full control over those shops, do they not?

A. They do.

Q. 27. Have you any doubt in your mind, at this  
826 time, but that the several steam fire-engines named by you on this examination are each owned by and the property of the city of New York, under its charter as a corporation or body politic?

Objected to as immaterial and incompetent, and a question of law.

A. No, sir.

*Cross-examination by* FREDERIC H. BETTS.

× Q. 28. Does any officer or department of the  
827 city of New York exercise any control over the Board of Fire Commissioners, or give any directions whatever as to the management, use, purchase, sale, or repair of the apparatus used in the department?

A. No.

*Re-direct Examination.*

R. D. 29. Who does "exercise any control," "or give any directions whatever as to the management, use, purchase, sale, or repair of the apparatus used in  
828 the department" referred to in the last question?

A. None but the fire commissioners.

R. D. 30. And they get their power from the Mayor and Common Council of the city of New York, to do the duties specified to be done in the fire-department?

Objected to as a matter of law, and as incompetent.

A. No: they get their power from the laws of the State of New York.

R. D. 31. Then, I understand you to say that the  
829 fire-department of the city of New York, and the three commissioners named by you as at the head of that department, carry on the business and affairs entirely independent of the authority of the city of New York, or of the Mayor, or of the Common Council: am I correct in this understanding of your last answer?

Same objection.

A. No, sir: after the appointment of the fire commissioners, and the confirmation by the Board of Aldermen, the fire commissioners are responsible to the  
830 Mayor for the management of the fire-department.

R. D. 32. The fire commissioners you have named perform the duties of their official place, act for, and are responsible to, the city of New York, or its Mayor, or its legislative body known as the Board of Aldermen: is this so?

Same objection.

A. We are responsible to the Mayor for the faithful performance of our respective duties.

R. D. 33. Those duties include the use and operation of steam fire-engines for the extinguishment of  
831 fires in the city of New York: do they not?

Same objection.

A. They do.

R. D. 34. State whether you were subpoenaed on the part of the complainant to appear here to-day and submit yourself to examination as a witness in this cause?

A. I was.

R. D. 35. If you have a copy of the subpoena with  
832 you, and if you have no objections, please produce the same in answer to this question, that it may be filed as an exhibit in connection with your examination.

A. I now produce it.

Subpoena offered in evidence, and marked "Complainant's Exhibit, O, October 30, 1878." J. A. S., Ex'r.

*Re-cross Examination.*

R. C. 36. When you say that the fire commissioners are responsible to the Mayor, do you mean that the  
833 Mayor, or any other officer or body, gives directions to them what to do or what not to do, or merely that they are subject to removal by the Mayor in case they do not comply with the law of the State?

A. The Mayor has no power to remove the fire commissioners without the consent of the Governor of the State.

R. C. 37. I meant, of course, with the consent of the Governor. Please answer the question with that addition.

884 A. There is no other officer that gives directions other than the fire commissioners.

*Re-direct Examination by MR. NORTON.*

R. D. 38. Gives directions about what?

A. As to the management of the fire-department of the city of New York.

JOSEPH PERLEY.

Sworn to before me, October 30, 1878.

JOHN A. SHIELDS,

885

*Examiner.*

Diedrich A. Schierenbeck, a witness produced on the part of the complainant, and first being duly sworn, testifies as follows:—

Q. 1. What is your name, age, residence, and occupation?

A. Diedrich A. Schierenbeck, aged forty-one years; I reside 147 East Thirty-first Street, New York; I am Assistant Auditor in the Finance Department of the city  
886 of New York.

Q. 2. What is the style of the office, and who fills that office, as the head of the finance department of the city of New York?

A. The comptroller, filled by Mr. John Kelly.

Q. 3. How came you to appear here at this time as a witness?

A. By the direction of the deputy comptroller, as Mr. John Kelly, the comptroller, could not attend, and I attend in his place.

887 Q. 4. State, if you know, who owns the steam fire-engines used in the fire-department in the city of New York.

Objected to as immaterial and incompetent, and as a matter of law.

A. The Mayor, Aldermen, and Commonalty of the City of New York.

Q. 5. You may state how you know that fact, and

you may refer to any paper or voucher that you may have with you bearing upon that inquiry.

838 Same objection.

A. They are paid for by the city of New York through their financial officer, the comptroller.

Q. 6. Since you have been subpoenaed or directed to come to this examination by the deputy comptroller of the city of New York to submit to an examination, as a witness, in place of Mr. Kelly, the comptroller, have you examined any records of the finance department of the city of New York, to ascertain who owned and paid for the several steam fire engines, or any of  
839 them that are or have been in use in the fire-department of the city of New York?

Same objection.

A. I have.

Q. 7. Have you any vouchers with you relating to the subject-matter of the inquiry mentioned in the last previous question?

A. I have one of the Amoskeag Manufacturing Company, amounting to the sum of fifteen thousand dollars in the aggregate, for building four third-class steam  
840 fire-engines on a contract dated November 15, 1876, which was paid on the 7th of March, 1877.

Q. 8. Who paid the bill referred to in the last answer, and out of whose money was it paid?

A. I presume Mr. Emmet, disbursing officer of finance department of the city of New York: it was paid out of the money in the City Treasury.

Q. 9. You have referred to a voucher for four third-class steam fire-engines built under a contract with the Amoskeag Manufacturing Company, under date of  
841 November 15, 1876, for which the sum of fifteen thousand dollars was paid out of the treasury of the city of New York by direction of the finance department; you may state, if you please, whether the voucher and contract to which you refer form a part of the public record of the city of New York, and whether the same belong to the files in the office of the comptroller of the city of New York?

A. To the first question I answer, I have; to the second, they do.

842 Complainant's counsel offers in evidence an original statement of an account dated Manchester, February 21, 1877, for four steam fire-engines, amounting to fifteen thousand dollars, which is marked "Complainant's Exhibit, P, October 28, 1878. J. A. S., Ex'r."

And also a letter dated New York, February 27, 1877, addressed to the Fire Commissioners of the city of New York, and signed Gilbert J. Orr, Chief of Battalion, in charge of Repair-Shops, and the same is marked "Complainant's Exhibit, Q, October 30, 1878.

843 J. A. S., Ex'r."

And also another paper, "*Voucher Schedule*," and filed upon the back, "A, Voucher, No. 4665, 1877," "Account of fire-department fund, appropriation for 1876," which is marked "Complainant's Exhibit, R, October 30, 1878. J. A. S., Ex'r."

And also offers in evidence a package containing several papers; twelve sheets, including the wrapper, purporting to be contract summary, general release, contract receipt for \$15,000.

844 Fire-department contract, and also a bond and sureties accompanying the same, and the specifications of third-class engines, and the same is marked "Complainant's Exhibit, S, October 30, 1878. J. A. S., Ex'r."

Q. 10. State whether you have the original subpoena or a copy of it, under which you were directed to appear as a witness by the deputy comptroller of the city of New York, as before testified to by you.

A. I have a copy of it.

845 Q. 11. I desire you to produce that subpoena in evidence, if you have no objection: if you cannot produce the copy for any reason, produce the original of it, which is now on the table before you.

A. I have no objections to produce the copy, but I want to retain it as a voucher in the finance department: I hereby hand you a paper which is handed to me as being the original subpoena, and which may be marked "Complainant's Exhibit, I," and the copy which I have may be marked to correspond.

846 Original subpoena, referred to by the witness, offered in evidence, and marked "Complainant's Exhibit, T, October 30, 1878. J. A. S., Ex'r."

Q. 12. State, if you know, who pays the fire commissioners their salary, whatever it may be.

Objected to as immaterial and as fixed by law.

A. They are paid by the finance department of the city of New York, out of the money in the treasury of the city.

D. A. SCHIERENBECK.

Sworn to before me, October 30, 1878.

847

JOHN A. SHIELDS,  
*Examiner, &c.*

Adjourned by consent of counsel to Thursday, October 31, 1878, at three o'clock, at the office of F. H. Betts, No. 20 Nassau Street, city of New York.

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NEW YORK, Thursday, October 31, 1878.

Met pursuant to adjournment, and adjourned to Saturday, November 2, 1878.

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NEW YORK, Saturday, November 2, 1878.

Pursuant to adjournment.

Present — Counsel as before.

Complainant's counsel now and here offers in evidence certified copy of complainant's Exhibit, P, October 30, 1878. J. A. S., Ex'r. Also certified copy of complainant's Exhibit, Q, October 30, 1878. J. A. S., Ex'r. Also certified copy of complainant's Exhibit, R, October 30, 1878. J. A. S., Ex'r. The same being copies of the originals that have already been offered in evidence, and properly marked and returned to the public record from which they were taken, and which were used during the examination of the witness, D. A. Schierenbeck.

Complainant's counsel offers in evidence certified copies of the several papers in one package marked "Complainant's Exhibit, S, October 30, 1878. J. A. S., Ex'r," consisting of "Contract Summary," "General



Release," "Contract Receipt for \$15,000," "Fire-department Contract," "Bond and Sureties accompanying the same," and also "Specifications of Third-class Engines," each of which were referred to by the witness, D. A. Schierenbeck, during his examination in this cause, the originals of which were at that time offered in evidence, and were marked as above stated, which originals have been returned to the public records  
851 where they belong, after having been duly marked, as this record will show.

Complainant here rests, and the case is now with the defendant's counsel for his proofs, and he is requested to proceed with the same at as early a day as possible.

**In the Circuit Court of the United States,**

**IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.**

**SECOND CIRCUIT.**

**IN EQUITY.**

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**CHRISTOPHER C. CAMPBELL,**  
**COMPLAINANT, AND ASSIGNEE IN TRUST,**

**VERSUS**

**THE MAYOR, ALDERMEN, AND COMMONALTY OF**  
**THE CITY OF NEW YORK,**  
**DEFENDANTS.**

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**REBUTTAL PROOFS AND EXHIBITS, ON THE PART AND IN**  
**BEHALF OF THE COMPLAINANT, TAKEN AT THE**  
**CITY OF BOSTON, MASSACHUSETTS.**

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**MARCUS P. NORTON,**  
**TROY, N.Y.,**  
**GEORGE H. WILLIAMS,**  
**WASHINGTON, D.C.,**  
**AND**  
**BENJAMIN F. BUTLER,**  
**BOSTON, MASS.,**  
*Of Counsel for Complainant.*



## EVIDENCE FOR COMPLAINANT IN REPLY.

TAKEN PURSUANT TO THE SIXTY-SEVENTH RULE OF  
THE SUPREME COURT OF THE UNITED STATES,  
IN EQUITY, AS AMENDED, BEFORE ME,

CHARLES C. CONANT,  
*Special Examiner.*

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BOSTON, MASS., July and August, 1879.

Present, July 10, 11, 12, 15, and 16, 1879: MARCUS P.  
NORTON, Esq., *of Counsel for Complainant.*

“ July 31, and Aug. 6, 7, 8, 9, 11, 12, 13, and  
14, 1879: MARCUS P. NORTON, Esq., *of*  
*Counsel for Complainant, and*

C. WYLLYS BETTS, Esq., *of Counsel for De-*  
*fendants.*

Before me,

CHARLES C. CONANT,  
*Special Examiner.*

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BOSTON, July 10, 1879.

Marcus P. Norton, Esq., Counsel for Complainant,  
presents to the Examiner the following Certified Copy  
of Order of Court.

## ORDER OF COURT.

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In the Circuit Court of the United States,  
IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.  
IN EQUITY.

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CHRISTOPHER C. CAMPBELL,  
*Complainant, and Assignee in Trust,*  
*versus*

THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK,  
*Defendants.*

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852 On reading and filing the annexed stipulation and consent in writing of counsel for the above-named complainant, and of counsel for the above-named defendants, dated New York, July 9, 1879; and on motion of Lockwood & Post, solicitors for complainant herein, it is

*Ordered,* That John G. Stetson of the city of Boston, Mass., the person named in the foregoing stipulation and consent hereto attached, and also Charles C. Conant, of said city of Boston, the person also named  
853 in the foregoing stipulation and consent, and last above referred to, each be appointed, and they are each hereby appointed, a special examiner in this cause according to the terms and conditions stated in the aforesaid named stipulation and consent of counsel, each with full power to summons witnesses, administer oaths, and take testimony and proofs in this cause on the part and behalf of the complainant herein, at the

said city of Boston, Mass., under the Sixty-seventh  
Equity Rule of this Court as amended ; but the said  
854 Charles C. Conant is to exercise the office of special  
examiner only in the cases and the manner provided in  
the said stipulation and consent of counsel, dated New  
York, July 9, 1879.

Dated at the city of New York on this eighteenth  
day of July, 1879.

WM. G. CHOATE.

[SEAL.] [A copy]

JOHN I. DAVENPORT,  
*Clerk.*

In the Circuit Court of the United States,  
IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.

IN EQUITY.

---

CHRISTOPHER C. CAMPBELL,  
*Complainant, and Assignee in Trust,*

*versus*

THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK,  
*Defendants.*

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855 It is now and hereby stipulated by and between  
counsel for the above-named complainant, and above-  
named defendants in this cause, and consent is here by  
given that John G. Stetson, clerk of the Circuit Court  
of the United States, in and for the District of Massa-  
chusetts, and residing in the city of Boston, Mass., be  
appointed a special examiner in this cause, with full  
power to summons witnesses, administer oaths, and  
take testimony and proofs herein on the part and in  
behalf of the complainant in the said city of Boston,  
856 under the Sixty-seventh Equity Rule of this Court as  
amended; and it is also further stipulated, and consent  
further given, that, in case of the absence of the said  
John G. Stetson for any cause, then, and in that event,  
that Charles C. Conant, a clerk in the office of the said  
John G. Stetson, clerk of the Court aforesaid, and re-  
siding in said city of Boston, be appointed special ex-  
aminer in this cause, with full power to summons wit-  
nesses, administer oaths, and take testimony and proofs  
herein, on the part and behalf of the complainant

857 under the Sixty-seventh Equity Rule of this Court as amended, and that an order by the Court may be made and entered according to the terms hereof.

Dated New York, July 9, 1879.

LOCKWOOD & POST,  
*Solicitors.*

MARCUS P. NORTON,  
*Of Counsel for Complainant,*  
Troy, N.Y.

858 FREDERICK H. BETTS,  
BETTS, ATTERBURY, & BETTS,  
*Of Counsel for Defendants,*  
New York.

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[INDORSED.]

859 In the Circuit Court of the United States, Southern District of New York. — In Equity. — Christopher C. Campbell *vs.* The Mayor, Aldermen, and Commonalty of the City of New York. — Stipulation of counsel, and order of Court, appointing special examiners herein. Marcus P. Norton, of counsel, and Lockwood & Post, Solicitors for Complainant. United States Circuit Court. — Filed July 18, 1879. — John I. Davenport, Clerk.

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DEPOSITION OF SIMON E. FURLONG.

860 *Direct Examination by* MARCUS P. NORTON, Esq., *of*  
*Counsel for Complainant.*

BOSTON, July 10, 1879.

Q. 1. Please state your name, age, residence, and occupation.

A. Simon E. Furlong; forty-six; Woburn, Mass.; machinist.

Q. 2. About how long have you been a machinist?

861 A. Twenty-six years.



Q. 3. Have you ever resided at Manchester, N.H.?

A. Yes, sir: I have.

Q. 4. When did you first go there to reside? and for about what length of time did you reside there?

A. In January, 1860. I resided there about eleven years continuously.

Q. 5. Do you know a company at Manchester, N.H., by the name of the Amoskeag Manufacturing Company? If you do, when did you first know it?

862 A. I do. In the early part of the fall of 1859.

Q. 6. Were you ever in the employ of that company? and, if so, when did you first commence, and how long did you continue?

A. I was. I think the twenty-sixth day of January, 1860, and continued until about 1871,—about eleven years I was there.

Q. 7. During those eleven years, were you continuously in the employ of that company, excepting, of course, the times of illness, or holidays, or such like?

863 A. I was.

Q. 8. What were your duties as an employee of that company during that time?

A. Delivering steam fire-engines to the parties to whom they were sold, and teaching others how to operate them in the places where they were sold, and other times working in the shop when not so engaged.

Q. 9. When did you first commence to take out engines for that company to persons to whom they had been sold, and to teach persons at the places of delivery  
864 how to operate those engines at fires?

A. Early part of February, 1860.

Q. 10. Did you continue that business during each of those eleven years you were employed by that company?

A. I did.

Q. 11. If I understand you correctly, you delivered most of the steam fire-engines built and sold by that company after you first went into its employ, and during the eleven years you were there; and that each  
865 engine so delivered by you was under the direction of some officer of that company; and that you taught

others how to operate those engines at fires in the vicinity of the places where you delivered them. Am I correct in this understanding?

A. That was my business there; and most of them I delivered. Some I did not. Those I did not deliver was because I was not there to go with them. That was my special business: no one else was employed there for that, but me, until about 1869 or  
866 1870.

Q. 12. You were familiar with the construction and operation of all the steam fire-engines built and sold by that company after you first went there, and while you were there, were you not?

A. I was.

Q. 13. While you were in the employ of that company, were you acquainted with a man by the name of Nehemiah S. Bean?

A. I was.

867 Q. 14. Was he also employed by that company? and, if so, in what capacity?

A. He was, as mechanical superintendent of the construction of steam fire-engines, and also superintendent of machine-shop of that company.

Q. 15. When did you first become acquainted with this Mr. Bean?

A. In 1856, at Lawrence, Mass., about that time.

Q. 16. Were you ever in the employ of Mr. Bean at Lawrence, Mass.?

868 A. I was under his instructions at Lawrence. He was building locomotives there, and I worked on them. I think he was employed by the Essex Company.

Q. 17. What time were you employed at Lawrence, when Bean was there, as stated in your last answer?

A. I left there about Thanksgiving time in 1857.

Q. 18. Do you know any thing about a steam fire-engine built by Bean & Scott at Lawrence, and known as "The Lawrence," and afterwards used or owned by the city of Boston?

869 A. I do.

Q. 19. State what you know with reference to that engine in Boston, for the first year after its delivery to the city of Boston.

A. I was assistant engineer of her for a year, or a little over. She was used at fires, and general fire duty. I was assistant engineer on her for one year under Bean & Scott, who contracted to run her for the city of Boston. After that she went into the possession of the city of Boston, and I was appointed engineer of her.

Q. 20. What kind of an engine was that? Was it a rotary, or was it a piston-pump engine?

A. Piston-pump.

Q. 21. Were you engineer of that engine at the time you first went into the employ of the Amoskeag Manufacturing Company?

A. I went from there to the Amoskeag Manufacturing Company.

Q. 22. You left your position as engineer of that engine for the purpose of going into the employ of the Amoskeag Manufacturing Company at Manchester, N.H., did you not?

A. I did.

Q. 23. In what year was it you left your position as engineer of that engine?

A. In January, 1860.

Q. 24. While you had "The Lawrence" engine in charge as engineer, did it contain an invention or device or any mechanism for conducting water under pressure from the hose or discharging chamber back into the suction or receiving chamber, so as to relieve pressure on the discharging hose, or pressure in the discharging chamber?

A. It did not.

Q. 25. There was no communication between the pressure or discharging chamber, or the suction or supply chamber, by means of an opening between the two chambers, or conduit, or water passageway, having a valve in combination with the same, so as to be opened from, or closed upon, a valve-seat therein, so as to regulate the passage of water under pressure between the two chambers, was there?

A. There was none.

Q. 26. Upon that engine was there ever put any

device for the purpose of relieving the pressure upon the discharging hose or discharging chamber of that engine?

A. There was.

Q. 27. About when was that, if you know?

874 A. It was somewhere about April or May, 1859.

Q. 28. Describe that contrivance and how it operated as well as you now remember.

A. At the neck of the air-chamber there were four outlets. We used two of them as outlets for hose, one on each side; and on one of the others we put on a pipe for relief when working one stream under heavy pressure. The pipe and valve run out about eighteen inches with an elbow pointing down, with a short piece of pipe connected to it, perhaps a foot long. To give  
875 relief, the engineer opened the valve in the relief-pipe, and the water was discharged on the ground in force and in large quantities when that valve was wide open.

Q. 29. What effect, if any, was produced upon the ground or pavement in consequence of the discharge of water as stated in your last answer?

A. It would wash away the ground and pavement in larger or less quantities.

Q. 30. Was there a considerable waste of water growing out of the operating of that valve, for the  
876 purposes described by you?

A. There was.

Q. 31. How many discharging outlets had that engine for attaching hose to deliver water on a fire?

A. Four.

Q. 32. Were all those four outlets used at fires for attaching hose for delivering water on a fire?

A. They were not.

Q. 33. How many were used for that purpose?

A. Two.

877 Q. 34. What became of the other two? or to what use were they applied?

A. One was used for relief; and the other we stopped up by what we called a dead cap, so it could not be used.

Q. 35. The pipe which you have previously spoken

of as a relief-pipe, for discharging the water on the ground or pavement, was attached to the outlet referred to in your last answer as being used for a relief, was it not?

878 A. It was.

Q. 36. The gate that was used in that outlet formed the valve in what you call relief-pipe, did it not?

A. Yes; only we put in a globe-valve which we used instead of the gate. We didn't use the gate, as it was unhandy when under pressure.

Q. 37. Do you know of any other alterations made in that engine so as to relieve the discharging hose or discharging chamber from excess of water-pressure, than 879 those you have last above described?

A. I do.

Q. 38. When was that?

A. Just after this that I have described, or about that time.

Q. 39. What were those?

A. By closing or bolting down two of the receiving valves to cut off the supply of water, — one each side in the receiving chamber.

Q. 40. Please explain as near as you remember 880 *why* these changes were made.

A. To get rid of this flow of water, and from obstructing the streets, and also to prevent the pump from being so flooded as to cause the engine to stop on the centre; and these did not accomplish the purpose.

Q. 41. Did you ever operate that engine after January, 1860?

A. Never but once, then only a few minutes.

Q. 42. Did it, at that time, have on the contrivances you have above described?

881 A. The pipe and valve were on it: whether the receiving valves had been changed or not, I don't know.

Q. 43. Do you know any thing with reference to a trial of a Philadelphia engine said to have taken place at Boston Common, at the Frog-Pond in this city, some time in 1858? I mean a steam fire-engine.

A. I know there was one tried there in the fall of 1858, and I was present.

Q. 44. What steam fire-engines, if you remember, were present at that trial, and took part in it?

882 A. "The Lawrence" was one, built by Scott & Bean, or Bean & Scott, and an engine they called "The Smith," I believe, built, I think, in East Boston. I don't know as "Smith" was the right name to that engine, but that is my impression; and a steam fire-engine from Philadelphia, built by Rainey & Neaffie I think; this engine's name was "Philadelphia Hose."

Q. 45. During that trial, did you see present Mr. Nehemiah S. Bean of Manchester, N.H.?

A. Yes, sir.

883 Q. 46. If you know, you may state whether that Philadelphia engine, or any of those steam fire-engines present at that trial, had a rotary or piston pump for its main water-pump.

A. They all had piston-pumps, — those three engines, — and no rotary.

Q. 47. Did the main water-pump of the Philadelphia steam fire-engine have a device, or any mechanism, connecting the pressure or discharging chamber to the suction or supply chamber, so as to return water under  
884 pressure from the discharging chamber back into the supply chamber for the purpose of relieving the discharging hose or discharging chamber from excessive water-pressure, during the operation of the engine?

A. I didn't see any thing of that kind.

Q. 48. Did that engine contain a device for the purpose of connecting the pressure or discharging chamber with the section or supply chamber of the main water-pump, by means of an opening, conduit, or water passageway, between those two chambers, and  
885 having combined therewith a valve so constructed and arranged as to be opened from, or closed upon, a valve-seat therein, whereby to regulate the flow of water, as well as to regulate the pressure in the discharging chamber, and upon the hose leading to and discharging water upon a fire?

A. It was something I did not see on the engine at all. I don't think it was there. If it had been, we should have had it on "The Lawrence" a short time afterwards.

886 Q. 49. Was that invention, or any thing substantially the same, ever put on "The Lawrence" to your knowledge, previous to 1863?

A. Never to my knowledge. I didn't see much of that engine after 1861.

Q. 50. You were present at the entire trial of these engines at the Frog-Pond on Boston Common, were you not?

A. I was.

Q. 51. You took a part in that trial, did you not?

887 A. I did.

Q. 52. Had there been upon any of those engines an invention of the kind or description stated in questions 47 and 48 of this examination, would you, or would you not, have been likely to have seen it and known about it at that time?

A. I think I should have been apt to have noticed it, if there had been.

Q. 53. Did you hear Bean or anybody else on that occasion say any thing about a device or invention of  
888 that kind?

A. I did not.

Q. 54. Did you ever hear Mr. Nehemiah S. Bean say any thing about a device, or invention, of that kind, subsequent to that trial, and down to the present time?

A. I have.

Q. 55. When for the first time? and where was it?

A. In the city of Troy, N.Y., at "The Arba Reade" steam fire-engine house, in 1860 I think, last of September or first of October.

889 Q. 56. State whether you and Mr. Bean were at that time making examination of the steam fire-engine "Arba Reade."

A. We were.

Q. 57. Was that steam fire-engine built by the Amoskeag Manufacturing Company?

A. Yes, sir.

Q. 58. At the time you and Mr. Nehemiah S. Bean were making those examinations of steam fire-engine "Arba Reade," at its house in the city of Troy, in  
890 September or October, 1860, did it have upon its

main water-pump a device, or invention, of the kind or description stated in questions 47 and 48 of this examination, which the examiner will please read to you?

[Questions 47 and 48 read to witness as requested.]

A. It did.

Q. 59. Did you and Mr. Bean at that time and place have any conversation together about that device, or invention, which you say was then upon the main water-pump of steam fire-engine "Arba Reade"?

891 A. We did.

Q. 60. You may state that conversation as near as you now remember it.

A. The remark he made about the invention was that it was a "*pretty sleek thing*," or a "*dumb good thing*," I don't remember which, but one or the other.

Q. 61. Who called Mr. Bean's attention to that invention on that engine?

A. I don't know who called his attention to it, but I know who called mine to it.

892 Q. 62. Who called your attention to it the first time?

A. James Knibbs, the engineer of "The Arba Reade."

Q. 63. When was that?

A. On the occasion while Bean and I were there at that trial.

Q. 64. What trial have you reference to in your last answer?

893 A. The trial of engines there in Troy at the Fair-Grounds in the fall of 1860.

Q. 65. What engines were present at that trial, if you know?

A. One of Lee & Learned's self-propellers, and one or two of their small engines, and one "Southwick Hose" of Philadelphia of the same build, one from Seneca Falls, N.Y., and two of the Amoskeag engines.

894 Q. 66. Did any of those engines have upon their main water-pump a device or invention of the kind or description stated in questions 47 and 48 of this examination, which the examiner is requested to read to you for your information, if you desire?



A. Neither of the Amoskeag engines, I am positive. Of these others I don't think they did. I wasn't so conversant with those.

Q. 67. On that occasion, and during that trial, did you hear any one say any thing about a device, or invention, of that kind?

A. Not at all.

Q. 68. At the time that you and Mr. Nehemiah S. 895 Bean were examining the "Arba Reade" engine at its house in Troy in September or October, 1860, and had conversation about the invention which you say James Knibbs showed and explained to you while you were in Troy at that time, did Bean say or pretend to you that he had ever seen or heard of that device, or invention, previous to that time?

A. He did not say or pretend that he had ever seen or heard of that invention before that time; and, from what he said, I inferred that that was the first time he 896 had seen or heard of it.

Q. 69. Had you, before that time that Knibbs showed and explained it to you on "The Arba Reade," ever before that time seen or known any thing about that device, or invention?

A. I never had.

Q. 70. Did you and Knibbs have some conversation about it at that time?

A. We did.

Q. 71. If you remember, you may state what was 897 said with reference to it.

A. The question I asked Knibbs was, if he was not afraid it would obstruct the receiving side of the pump. His answer was, No, as far as he had tried it. Then I think he told me why he tried this experiment. I think it was on account of his working his engine at a fire, and was obliged to have one of the discharge gates open so as to relieve her, so she would run without a very high pressure of steam, so as not to burst the discharging hose.

898 Q. 72. At the time you went into the employ of the Amoskeag Manufacturing Company, as you have stated, did the steam fire-engine then being built by

that company have for its main water-pump a vertical double-acting pump, with the cylinder surrounded by a circular chamber, so divided vertically outside the cylinder as to answer for both the suction and the discharge chambers of the pump, and also a separate valve-plate at the top and bottom of the pump, carrying both the suction and discharge valves, — the suction-valve  
 899 being upon one side of the plate, and the discharge-valve on the other.

A. When I first went there, they had not built any of this kind of pumps. They were building only rotary-pumps for their steam fire-engines.

Q. 73. Did they ever build any main water-pumps for steam fire-engines, of the kind described in the last question?

A. They did.

Q. 74. When was the first steam fire-engine with a  
 900 main water-pump of that kind built by that company, if you know?

A. While I was in Chicago, in the spring of 1860.

Q. 75. Did that company build any steam fire-engines having a rotary-pump, after the piston or plunger pump, mentioned in your last answer, was built?

A. They did.

Q. 76. How many?

A. I don't think a great many. They built one that went to Fall River, which was in December, 1865,  
 901 I think, having a straight boiler, which I regarded as a failure. It was not satisfactory to the parties for whom it was built.

Q. 77. Give the name and number of the first steam fire-engine built and delivered by the Amoskeag Manufacturing Company, having for its main water-pump a piston or plunger, and of the kind and description referred to in question 72 of this examination, which the examiner will read to you for your information.

902 A. I find, by examining a pamphlet circular issued by that company, that it was the "Arba Reade;" and I am satisfied that it was so. That engine went to Troy, N.Y.; and it was the same engine Mr. Bean and I examined in Troy the fall afterward.

Q. 78. Give the name and number of the next steam fire-engine having for its main water-pump a force-pump of that description.

A. "The Fire King." She was what is called a double-plunger: the city of Manchester had her. She  
903 was the first double-plunger engine made by that company.

Q. 79. At the time those engines were built by that company, did they contain a device, or invention, of the kind described in questions 47 and 48 of this examination, which have been read to you two or three times by the examiner during this examination?

A. They did not.

Q. 80. Give the name, if you can, of the first single or double plunger or piston-pump engine, having  
904 for its main water-pump a pump of the kind described in question 72 of this examination,—which has also been two or three times read to you by the examiner,—having thereon the device and invention described in questions 47 and 48 of this examination; I mean, built by the Amoskeag Company, after that company built "The Arba Reade" and "The Fire King."

A. I never saw it on any engine previous to building "The Constitution," No. 7, for the city of Brooklyn, N.Y.; and I know it was not on her when delivered.

905 Q. 81. Was this device, or invention, ever put on "Constitution," No. 7?

A. It was.

Q. 82. By whom? and when?

A. By myself, about 1869, at the Amoskeag Works at Manchester, N.H.

Q. 83. Did "The Medford," No. 1, steam fire-engine, built by the Amoskeag Manufacturing Company, and sold and delivered to Medford, Mass., in September, 1861, have that invention, or device, on its main water-  
906 pump at that time?

A. It did not.

Q. 84. Did "The Phoenix," made and sold by that company to the city of Hartford, Conn., in November, 1861, at that time have upon its main water or force pump that device, or invention?

A. Not to my recollection or knowledge.

Q. 85. Do you know any thing with reference to  
 "The J. C. Osgood" steam fire-engine, built by the  
 Amoskeag Manufacturing Company, and sold and de-  
 907 livered to the city of Troy, in January, 1862? I mean  
 particularly as to its main water or force pump and  
 connections; and, if you do, you may state what you  
 now remember about that.

A. I know that I saw her pump when she was be-  
 ing built. Stevens or French drew my attention to  
 this valve that was put in the partition or opening of  
 this pump, between the discharge and supply chamber.

Q. 86. For what purpose was the opening in the  
 partition of that pump? and how did the valve operate  
 908 in connection with that opening?

A. The opening was to relieve the pump under a  
 heavy pressure, the valve was put in for that purpose.  
 It operated by the hand, to close it upon the valve-  
 seat, or opened from it so as to admit the passage of  
 water from the discharging chamber into the receiving  
 chamber.

Q. 87. About what was the diameter or opening of  
 the water passageway between these two chambers?

A. I should judge an inch and a quarter, or larger.

909 Q. 88. Upon seeing the opening, or water passage-  
 way, between the pressure or discharging chamber, and  
 the suction or supply chamber, and the valve so con-  
 structed and arranged as to be opened from, or closed  
 upon, a valve-seat in that water passageway, did you,  
 or did you not, regard those as substantially the same  
 as you had previously seen on "The Arba Reade"  
 when James Knibbs showed you that engine in Troy,  
 and explained to you his invention as he had then ap-  
 plied it to that engine?

910 A. I did.

Q. 89. After the Amoskeag Manufacturing Com-  
 pany had built "The Jason C. Osgood," state whether  
 most of their steam fire-engines built after that con-  
 tained this invention, or device, which you saw in the  
 main water-pump of the "Osgood" while it was being  
 built, and which was explained to you by Mr. Knibbs  
 at Troy, as you have testified.

A. I should judge, to the best of my recollection, they did; but I think it was some time before they put it on 911 to the third-class engines.

Q. 90. From your experience as an engineer and as a practical mechanic, what is your opinion as to the value and importance of this device, or invention, as applied to a piston or plunger main water-pump of a steam fire-engine?

A. I consider it of great value and importance in the operation of a steam fire-engine.

Q. 91. Do you know how many rotary steam fire-engines were made and sold by the Amoskeag Manufacturing Company previous to the first day of May, 912 1860? I mean by rotary-engines, those having a rotary water-pump.

A. Nine or ten.

Q. 92. If you know, please give the names of them, and the places where they were sent or delivered.

A. "The Amoskeag" was the first, and was delivered in Manchester, N.H., in August, 1859; "The Machigonne," delivered in Portland, October, 1859; "Eagle," delivered in Boston, November, 1859; "East 913 Boston," delivered in Boston, December, 1859; "Quequechan," delivered in Fall River in December, 1859; "Onward," delivered in New Bedford in January, 1860; "Little Giant," delivered in Chicago, Ill., in February, 1860; "Barnicoat," delivered in Boston, February, 1860; "Saratoga," delivered in Boston, March, 1860; "Relief," delivered in Boston in March, 1860.

Q. 93. Was there any other kind of main water-pump used on those engines than the rotary, for drawing and discharging water upon fires? 914

A. No, sir: there was none.

Q. 94. State whether you regard the rotary-pump as the same, or substantially the same, in construction and operation as the piston or plunger pump for drawing or throwing water upon fires.

A. I do not.

Q. 95. State whether the construction and operation of the piston or plunger pump is substantially and

materially different, or substantially and materially the  
 915 same, for the purpose of drawing and discharging water  
 through one or more lines of hose on a fire, as a rotary  
 water-pump for the same purpose.

A. I should say they are different in construction  
 and operation for the same purpose.

Q. 96. Did any of those ten rotary-engines have  
 upon their rotary water-pump a device or any mechanism  
 connecting a pressure or discharging chamber to a  
 suction or supply chamber, so as to return water under  
 pressure in the discharging chamber from that chamber  
 916 back into a supply or suction chamber for the purpose  
 of relieving the discharging hose or discharging chamber  
 from excessive water-pressure during the operation  
 of the engine?

A. Not to my knowledge, any thing of that kind  
 was ever used for that purpose.

Q. 97. Did any of those rotary-engines contain a  
 device for the purpose of connecting a pressure or dis-  
 charging chamber with a suction or supply chamber of  
 the rotary water-pump, by means of an opening, con-  
 917 duit, or water passageway, between such chambers, and  
 having combined therewith a valve so constructed and  
 arranged as to be opened from, or closed upon, a valve-  
 seat therein, whereby to regulate the flow of water  
 between such chambers, as well as to regulate the pressure  
 in the discharging chamber, and upon the hose  
 leading to and discharging water upon a fire?

A. I never saw one used for that purpose on a  
 rotary-engine. They never had such a device as is  
 used on the piston-pump engines for the purposes stated  
 918 in the question.

Q. 98. Have you ever seen the rotary-pump engine  
 "Eagle" No. 3, now at Manchester, N.H., in the shop  
 of S. C. Forsaith & Co., and said to have been built by  
 the Amoskeag Manufacturing Company, and sold and  
 delivered to the city of Boston in November, 1859?

A. I have seen it.

Q. 99. Have you ever worked that engine?

A. I have.

Q. 100. Where? and on what occasions?

919 A. I worked her in the latter part of 1859. She was housed in engine-house on Purchase Street, temporarily, in "Lawrence" steam-engine house. I worked her at a fire at Chickering's piano-forte rooms, on Washington Street, in Boston, on the last of November or first part of December, 1859.

Q. 101. I now show you six photograph cards, marked Nos. 1, 2, 3, 4, 5, and 6, July 10, 1879, C. C. C., Spec. Ex'r, representing a tube and a valve-chamber therein, and a pipe bolted to the tube near to this  
920 valve-chamber. I wish you to look at those, and state whether they represent corresponding parts of "Eagle" engine No. 3, so far as you are able to determine from an inspection of those cards. In some of those views you will observe the valves in the valve-chamber closed, and in others as being opened.

A. They do.

Q. 102. The pipe that stands in a vertical position, and having a faucet at the lower end, which is bolted upon the horizontal tube, was put upon rotary-pump  
921 engine "Eagle" No. 3, for what purpose, if you know?

A. For passing water around the pump to the discharging hose in case we got to a fire, made connections to a hydrant before we had sufficient steam to operate the pump for throwing water, so as to let a stream of water run from the hydrant on to a fire while we were getting up steam, and before the rotary-pump was started for the purpose of throwing water on to a fire.

Q. 103. After the rotary-engine had steam sufficient to start the pump for throwing water on to a fire, would  
922 water at the same time pass through this pipe you have described in your last answer?

A. It would, if you did not close the valve, or cock.

Q. 104. Then, in order to pass the water through the rotary-pump, it became necessary, did it not, to close the faucet, or plug-cock, shown in the lower end of this vertical tube, fastened to the horizontal tube, in some of the photographs, did it not?

A. If there was much force, it did.

Q. 105. Suppose that faucet, or cock, should remain  
923 open under a hydrant pressure, would, or would not, the

water by that pressure be forced around or past the rotary-pump and discharged upon a fire, where the nozzle of the discharging pipe was not above the level of the water in the reservoir supplying the hydrant, — I mean while the rotary-pump is still, and without its aid?

A. It would.

Q. 106. Did this pipe, having the faucet, or plug-cock, in it at or near its lower end, as shown in some  
924 of the photographs, have any name, so far as you know, when applied to those rotary-pump engines?

A. Yes: we called it a pipe for passing the hydrant water around the pump. I have called it, since I have been connected with the water-works, a "by-pass," and think it a proper name.

[*Adjourned.*]

JULY 12, 1879.

Q. 107. How many of those rotary-engines had,  
925 upon the rotary water-pump, the pipe and plug-cock, described in question 106 of this examination, and which, in your answer thereto, you denominate a "by-pass"?

A. Six of them, I think, had it on the receiving pipe, but none on the pump itself.

Q. 108. Give the names of those engines which you say had the pipe and plug-cock valve on the receiving pipe, but did not have it on the pump itself.

A. "Eagle 3," of Boston; "East Boston," of Bos-  
926 ton; "Little Giant," of Chicago, Ill.; "Barnicoat," of Boston; "Saratoga," of Boston; and "Relief," of Boston.

Q. 109. Why did not the others have on the device which you have called a "by-pass"?

A. Didn't think it necessary, on account of having no hydrant pressure where these engines were located.

Q. 110. Then, if I understand you correctly, this device of pipe and plug-cock valve, with one end connected to the receiving tube and the other connected to  
927 a square box between the rotary-pump and feed-water tank, for passing water around the pump, and entirely



independent of the pump, which you call a "by-pass," was not used on any of those rotary-engines unless such engine went to a place where there were water-works and hydrant pressure. Is that it?

A. It is.

Q. 111. What do you mean to be understood by the use of the word "by-pass," as applied to the rotary-pump engine, and as you have used it in this examination?

A. A pipe arranged to pass water around the pump when the pump is not in motion, or around a water-meter to save measuring the water.

Q. 112. In passing water around the rotary-pump by the pipe of which you have spoken in your last answer, by what means or agency is it done? I mean, how does the water get through?

A. By pressure behind, which I call hydrant pressure.

929 Q. 113. For what purpose was the plug-cock valve used in the pipe which you have last above referred to?

A. To alter the course of the water, to prevent it from going around by closing it, and to let it go through the pump when the pump was in operation, or opening it to let the water pass around the pump when the engine was standing still.

Q. 114. In those rotary water-pump engines built by the Amoskeag Company, was there a discharge and suction water-chamber surrounding the rotary-pump?

930 A. I should say they had none surrounding it.

Q. 115. How, or by what means, was the rotary water-pump secured in a working position in those engines?

A. By lugs on the back side of the pump to the boiler, by means of screw-bolts; and on the top it was secured to a square box by means of flanges with screw-bolts; and the square box was secured to the tank by screw-bolts and flanges.

Q. 116. What was about the size of this square box 931 on the inside? and how high was it?

A. I should judge about eight inches; about eight inches in height on the outer side; it was less in the circle.

Q. 117. How was the suction-tube represented by the photographs marked Nos. 1, 2, 3, 4, 5, and six, July 10, 1879, C. C. C., Spec. Ex'r, secured to the under side of the rotary-pump? I now hand you the photographs referred to, for your examination in answering the question.

932 A. By means of flanges and bolts.

Q. 118. In those photograph cards you will observe a valve chamber having in it a valve or valves, represented in some of them as being opened, and in others as being closed. For what purpose, if you know, was that valve or valves used?

A. So as to expel the air from the pump so that it would form a vacuum in the receiving hose, when the pump was put in operation. If those valves were not there, the water would run back into the reservoir.

933 Q. 119. When that pump was in operation, would those valves be open, or closed?

A. If she formed a vacuum she would open those valves, and they would remain open while she was drawing and discharging water.

Q. 120. What effect, if any, would be produced on those valves, were the rotary-pump to cease to operate?

A. If there was any weight of water above, they would close, and prevent the water from going back if they closed tight.

934 [*Adjourned.*]

JULY 15, 1879.

Q. 121. What is the real purpose, if you know, of those valves in that particular position, namely, between the suction-pipes and the lower part of the rotary-pump chamber, as shown in those photographs, about which I have already asked you several questions?

A. They are used for keeping the water from running back from the rotary-pump into the suction hose  
935 when the rotary-pump stops.

Q. 122. By what are those valves opened so as to let water pass them?

A. By the pump, when it is in operation, draughting water.

Q. 123. Suppose the pump to be still, I mean the rotaries containing flanges or cogs on their outer periphery for drawing water, and the hydrant pressure be admitted to the supply pipe, what would be the effect, if any, produced upon those valves?

936 A. If the water had a chance to pass around the pump, it would raise the valves. They would rise in any event, until the space underneath the pump was filled with water.

Q. 124. Would the water pass around the pump in any large quantities, unless the rotaries were in motion by steam-power?

A. It would not pass around at all, unless there was a passageway for that purpose.

Q. 125. Then, if I understand you correctly, it  
937 would be impossible to get a stream of water to pass those rotaries, when still from the hydrant, by means of hydrant or reservoir pressure through the street or underground mains?

A. It would be impossible to get an effectual stream for fire purposes, unless the rotaries were in motion. There would be some water, which some would call a stream, pass through when the rotaries were still.

Q. 126. What would be the effect, if any, if the  
938 "*flanges*" I have alluded to as being on the other periphery of the rotaries, should become somewhat worn by use? I mean by "*flanges*" that part which you have sometimes called "*cams*" of the rotary, and which have sometimes been called "*cogs*," and which move the water when the rotaries move.

A. It would leave a space for the water to run through the pump.

Q. 127. So, too, in that case, if water could run through from the hydrant, under pressure when the pump is standing still, because of the space and by the  
939 wearing away of those "*flanges*," or "*cams*," the water under excessive pressure, if any, in the hose leading to the fire, would be returned by that pressure back through that space formed by the wearing of those "*flanges*," or "*cams*," would it not?

A. It would run back to the foot-valve; and, if the

leading pressure was more than the receiving pressure, the foot-valve would close.

Q. 128. During your examination you have spoken of a device, consisting of a pipe having a plug-cock  
 940 valve at or near the lower end of it, with one end connected to a receiving pipe, and the other end connected to a square box of a rotary-pump steam fire-engine, so as to let the water pass through the same from the hydrant to the hose leading to the fire, by means of pressure in the hydrant from the main reservoir, so as to discharge a stream of water upon the fire. I have put several questions to you concerning this contrivance, to which you have made answer. You have denominated this arrangement of tube and plug-cock valve  
 941 and its connections as a "*by-pass*," have you not?

A. I have.

Q. 129. Do you know the name of the first rotary steam fire-engine, upon which this "*by-pass*" was put by the Amoskeag Manufacturing Company? If you do, give it.

A. "Eagle," No. 3, of Boston, Mass.

Q. 130. Do you know how that "*by-pass*" came to be put in the first instance on that steam fire-engine, "Eagle," No. 3?

942 A. I do.

Q. 131. Please state the same, and the circumstances connected therewith, if any.

A. That was put on by my suggestion to Mr. Bean. I made that suggestion to Mr. Bean. It was at "The Lawrence" steam fire-engine house, on Purchase Street, Boston, in 1859.

Q. 132. At what time in 1859 was that?

A. Somewhere along the last of 1859. I think in August or September of that year.

943 Q. 133. "The Amoskeag" was the first rotary-pump engine built by the Amoskeag Company, was it not?

A. It was.

Q. 134. Did that engine have upon it that "*by pass*"?

A. It did not; and I never saw it with one on.

Q. 135. How came you to suggest to Nehemiah S. Bean of Manchester, N.H., to put this "*by-pass*" on their rotary steam fire-engines?

944 A. Because they could not get an effectual stream of water from the hydrant when the pump was still.

Q. 136. Do I understand you, then, to say, that in some instances it was desirable to have a stream of water flow from the hydrant through the leading hose upon a fire while the rotary-pump was still?

A. It was, in some instances.

Q. 137. State those instances as far as you can.

A. In case we got to a fire, and made our connections before having sufficient amount of steam to start  
945 the engine, it was desirable to pass hydrant water upon a fire while waiting for steam.

Q. 138. At the time you made this suggestion to Mr. Bean, in Boston, to put this "*by-pass*" upon the rotary steam fire-engines being built at the Amoskeag works, what, if any thing, did he say to you in reference to it, if you remember?

A. We had a conversation about the rotary-pump on the "Amoskeag" steam fire-engine, about passing water in case they got to a fire before they had steam  
946 sufficient to put the pump in operation. I asked him if that would pass a stream through the pump. He said it would,—a small stream. I asked him how much of a stream; and he said, "A few feet." I asked him if it would amount to any thing at a fire. He said, "Not a great deal." Then he spoke about this pipe, and said he should put them on to the rotaries he built where they had water-works, but didn't think they would be necessary where they did not have water-works; and I think for that reason he didn't put them  
947 on the engines where they did not have water-works.

Q. 139. Then, if I understand you correctly, you mean to be understood as saying to the Court that this "*by-pass*" was only put on the rotary water-pump engines where there were water-works and hydrant pressure, and only then as a matter of convenience, to pass water from the hydrant through the leading hose upon a fire, before sufficient steam could be had for

moving the rotary-pump by steam-power. Am I correct in this understanding, and as to what you wish  
 948 the Court to understand from your whole testimony on this subject, relating to what you call a "*by-pass*"?

A. You are; and I wish the Court to so understand it.

Q. 140. And you mean to be understood as saying that that "*by-pass*" was put upon those rotary-engines for no other use or purpose than to allow a stream of water to flow from the hydrant, pass the rotary-pump, into a hose leading to and upon a fire, by hydrant pressure. Is that it?

949 A. Yes.

Q. 141. And you mean, also, to be understood that you suggested that "*by-pass*" to Mr. Nehemiah S. Bean, here in Boston, for *that* purpose, and for no other purpose. Is that it?

A. That's just it.

Q. 142. And you mean, also, to be understood that you never knew of its being used for any other purpose than that. Is that it?

A. That is it. I never knew of its being used for  
 950 any other purpose.

Q. 143. How long after you made those suggestions to Mr. Bean, before you went into the employ of the Amoskeag Company?

A. About six or seven months.

Q. 144. Do you know any thing of a trial had here in Boston, with a piston or plunger pump steam fire-engine, made by the Amoskeag Company, among the first of their build or make?

A. I do.

951 Q. 145. In what did that experiment or trial consist, and what was it for?

A. The trial of this engine was before the chief engineer of the city of Boston, Mr. George W. Bird. That was all the trial we gave for a public trial, to test the flowing capacity, and to see whether he would accept the engine, or not. We made trials on that occasion for our own satisfaction, to see what the difference was in distance in water passing through the pump

when the pump was still, or with a hose connected  
 952 direct to the hydrant without the connection being  
 made to the pump. The difference was very slight.

Q. 146. The trial by you and Mr. Bean, then, was  
 to see if that engine would require this "*by-pass*" on  
 it or not. Was that so?

A. It was.

Q. 147. What, if any thing, did Bean say about this  
 "*by-pass*" being used on this kind of engine?

A. He said he didn't think they would need it on  
 piston-pump engines.

953 Q. 148. The reason for his saying that was because  
 a stream would flow through that piston water-pump,  
 to and through the discharging hose by hydrant pres-  
 sure, when the engine was still. Was it not?

A. It was.

Q. 149. In what year was that?

A. 1860.

Q. 150. What part of that year?

A. About August, 1860. It was about the time of  
 delivering the steam fire-engine "Faxon."

954 Q. 151. "The Faxon" was a single-plunger pump  
 engine, delivered to the city of Boston, was it not?

A. Yes, sir.

Q. 152. Was that the first piston or plunger pump  
 engine delivered to the city of Boston by the Amos-  
 keag Manufacturing Company?

A. It was.

Q. 153. Were you in the employ of the Amoskeag  
 Manufacturing Company at that time?

A. Yes, sir.

955 Q. 154. In the "Faxon" engine, were the discharge  
 and suction parts of the water-chamber surrounding  
 the cylinder connected by a valve in the vertical parti-  
 tion dividing those chambers, and known as a regula-  
 tion or relief valve for controlling the passage of water  
 from the force or discharging chamber back into the  
 supply or suction chamber? or were there any devices  
 equivalent for the same?

A. There was not, at the time she was delivered to  
 the city of Boston.

956 Q. 155. Did that engine ever have on its main water-pump any devices of the kind spoken of in the last question?

A. I don't remember. There was none on at the time it was delivered. If there was one, it was put on afterwards.

Q. 156. When did that company first commence to build steam fire-engines having a device of that description on its main water-pump?

A. The first I ever saw it on was "The Jason C. Osgood," that went to Troy, N.Y.

Q. 157. Do you remember about what time that was?

A. It was the latter part of 1861.

Q. 158. Do you know whether the main water-pump patterns at the Amoskeag Manufacturing Company's shops were in any wise changed or altered so as to apply successfully the devices about which I am now inquiring of you, so as to relieve the pressure in the hose and the pressure chamber by returning the  
958 water back into the suction or supply part of that pump?

A. I think the pattern of "The Arba Reade" was altered. I have always understood the pump pattern of "The Arba Reade" was altered so as to put in that device for the engine called "The Jason C. Osgood," that went to Troy.

Q. 159. About when do you think those patterns were altered?

A. In the fall of 1861.

959 Q. 160. Did you ever see or know of a main water-pump of a steam fire-engine having such devices for connecting the pressure and supply chambers as those I have asked you about, until you saw them on the main water-pump of "The Jason C. Osgood" at the Amoskeag Works, Manchester, N.H.?

A. I never did.

Q. 161. Do you remember who delivered the steam fire-engine "Washington," No. 1, to the city of Fond du Lac, Wis.?

960 A. I do.



Q. 162. Who? and when was it?

A. I delivered it about September, 1863.

Q. 163. Was that a piston or plunger pump engine?

A. It was.

Q. 164. Did it have a "*by-pass*" on it?

A. It did not. It was a second-class harp-tank engine.

Q. 165. What kind, if any, of mechanical devices were used on that engine to give relief to the discharging hose and pressure chamber to which they were attached?  
961

A. There was one under the air-chamber over the front axle, called a relief valve.

Q. 166. Describe the construction of that valve as near as you can, and where the water went that passed through it.

A. It was attached under the air-chamber, in the pressure-pipe leading to it: the water discharged through it was forced on the ground. It was what I  
962 call a spring safety valve.

Q. 167. This valve was so constructed, if I understand you correctly, as to be opened by water-pressure in the force-chamber of the water-pump, and to close upon its valve-seat when that water-pressure was reduced, overcome by the strength or pressure of the spring connected with it. Is that so?

A. Yes.

Q. 168. At the time you started from the shops of the Amoskeag Company, at Manchester, N.H., to deliver that engine to the city of Fond du Lac, what  
963 conversation, if any, did Mr. Nehemiah S. Bean have with you concerning that valve? or what directions did he give you, if any, about it?

A. He said it was a new thing, and he wanted me to try it to see how it worked, and report to him about the operation of the valve.

Q. 169. Did you test it at Fond du Lac or anywhere else, as requested by Bean?

A. I did, at Janesville, Wis., on the way to Fond  
964 du Lac.

Q. 170. Did you report the operation to Bean, on your return home?

A. I did, I presume.

Q. 171. At the time Bean gave you the instructions of which you speak, did he appear to you to seem anxious to have that contrivance prove a success? You are to give your opinion from your recollections of the circumstances attending it, what he said, the manner of saying it, and his appearance while saying it.

965 A. He wanted me to try it, and report. You must judge from that whether he was anxious, or not.

Q. 172. At this time, did Mr. Bean know that James Knibbs of Troy, N.Y., had a contrivance upon the steam fire-engine "Arba Reade," for returning water under excessive pressure in the force or discharging chamber to the suction or supply chamber, so as to relieve the excessive water-pressure upon the hose, and also in the discharging chamber to which the hose-pipe was attached?

966 A. He did; because he and I talked about it a long time before.

Q. 173. After you made the report to Mr. Bean about that Fond du Lac engine, did the Amoskeag Manufacturing Company build any more steam fire-engines with that kind of valve for relieving the pressure on the discharging hose and discharging chamber of the main water-pump?

A. Not that I know of. I never saw any more of that description up to the time I left.

967 Q. 174. About what time did you make that report to Mr. Bean?

A. Right after my return home from that trip, which was in the fall of 1868.

Q. 175. After that, or about that time, did the Amoskeag Company build most of its steam fire-engines of the piston or plunger pump kind, having thereon the device which you have described as having been put on "The Jason C. Osgood" for the purpose of connecting the pressure and supply chambers by means of a conduit, or water passageway, between them, having combined therewith a regulating valve so constructed and operated as to be opened from, and closed upon, a valve-seat therein, and to regulate the passage

968

of water from the pressure to the suction chamber, and thereby relieve excessive pressure upon the discharging hose and in the discharging chamber of that pump?

A. I am satisfied they put them on before that time, and after the "Osgood" was made. After that I never saw an engine that was built there, but that had  
 969 that contrivance on, — except, perhaps, one or two of the third-class engines, which were small engines, and the last they put it on; and, after a while, these had it on; and finally they all had it on, and none were built without.

Q. 176. Were you at the trial of the steam fire-engine "Pacific," built by the Amoskeag Manufacturing Company, and tried at Montpelier, Vt., at the time it was said to have had a trial there to test its capacity and power?

970 A. I was.

Q. 177. Did you take any part in the operation of that engine at that trial test?

A. I did: worked with her most of the time there. We tried her at the Onion River, and on the Common in that village, on that day, the 4th of July, 1860.

Q. 178. And Mr. Nehemiah S. Bean was present at that trial, was he not?

A. He was; and worked the engine part of the time.

971 Q. 179. Where did that engine go to from Montpelier, if you know?

A. Went to Lawrence, Mass., taken there by Bean and myself.

Q. 180. Did the main water-pump of that engine contain a device of any kind or description connecting the force or discharging chamber with the suction or supply chamber, by means of an opening, conduit, or water passageway, between those two chambers, having combined therewith a regulating valve so constructed  
 972 and arranged as to be opened from, and closed upon, a valve-seat therein, so as to regulate the passage of water from the discharging to the supplying chamber, and relieve the discharging-hose attached to the force-chamber, and also relieve that chamber of excessive water pressure?

A. She didn't, up to the time of her delivery to the city of Lawrence; since then, I have not seen her to notice her.

[Adjourned.]

973

AUGUST 7, 1879.

Met pursuant to adjournment.

Present — Counsel for both parties.

Q. 181. State whether, in the rotary water-pump engines about which you have testified, there was a vacuum-chamber constructed and used expressly for that purpose.

Objected to as immaterial.

A. There was not.

974 Q. 182. In the same engines having rotary water-pumps, built and sold by the Amoskeag Manufacturing Company, and about which you have testified, was there an air-chamber constructed and used expressly for that purpose, and attached to the main water-pump?

A. Well, there was a chamber, — whether you call it an air-chamber or not, — a chamber to which the hose was attached to outlets. On some of them there was what we considered an air-chamber, and on some of them there was not.

975 Q. 183. About how far from the main water-pump was that chamber located?

A. Somewhere in the neighborhood of four, or four and a half feet.

Q. 184. That was in the front end of the water-tank, was it not?

A. It was.

Q. 185. Was there any other air-chamber than that attached to the discharging side of those engines having rotary water-pumps, and used in connection with

976 that pump?

A. I never saw any.

*Cross-examination by C. WYLLYS BETTS, Esq., of  
Counsel for Defendants.*

× Q. 186. What was the first steam fire-engine with the construction of which you had any thing to do?

A. "The Lawrence."

977 X Q. 187. When was that?

A. In 1859.

X Q. 188. In what year was the trial on Boston Common in which the engine "Philadelphia" took part?

A. The latter part of 1858, or fall of 1858, as near as I can recollect.

X Q. 189. At the time of that trial, then, you had never had any thing to do with constructing steam fire-engines?

978 A. I never had.

X Q. 190. How old were you then?

A. About twenty-six years old.

X Q. 191. What was the first steam fire-engine that you worked?

A. "Lawrence" steam fire-engine, that I operated.

X Q. 192. At the time of this trial, then, in 1858, you had never operated a steam fire-engine?

A. No, sir: I never had.

X Q. 193. After the engine "Lawrence" was delivered to the city of Boston, in 1861, how often did you see her up to 1863?

A. Well, I was with her in 1859 all the time; after 1861 I occasionally saw her.

X Q. 194. Where did you see her between 1861 and 1863?

A. I occasionally saw her all the time she was in Purchase Street. I can't state the exact time. I can't state the exact time when she went out of the department. I saw her occasionally until she went out.

980 X Q. 195. Did you at such times examine her particularly to see whether any changes had been made?

A. Never knew that any changes had been made on her after I left her.

X Q. 196. Can you swear that between 1861 and 1863 you saw that engine? If so, state when.

I am sure I saw her after 1861, but I can't say where and when. Don't know what time she went out of the department.

X Q. 197. You say that at the trial of "The Arba

981 Reade" at Troy, there were two other Amoskeag engines. What were they?

A. I don't think I ever saw "The Arba Reade" on public trial at Troy with any engine.

× Q. 198. You were present, were you not, at a trial of engines at the Fair-Grounds, at Troy?

A. I was at one trial.

× Q. 199. What Amoskeag engine took part in that trial?

A. The "Huron," built for Detroit, Mich., and  
982 delivered there after the trial, double engine; and I think there was an Amoskeag single engine that was delivered in Troy afterwards.

× Q. 200. What was the name of that single engine?

A. I think she went by the name of "Little Amoskeag" at the time. That is the name I think she went by at the time of the trial, — I won't be positive.

× Q. 201. Can you swear positively that at that trial this "Little Amoskeag" engine was present?

983 A. I can swear there was a second-class engine present. I can't swear, but am very positive, that was the name of it.

× Q. 202. Were you ever present in Troy at any other trial of engines?

A. Don't think I ever was.

× Q. 203. How often since that trial have you visited the city of Troy?

A. Well, I couldn't tell exactly how often. I have been there several times after that trial. One occasion,  
984 on delivering an engine to Albany, I went up there. One occasion when I delivered an engine at Syracuse. Occasionally when I was going West I would stop over to see parties I was acquainted with, not on any particular business there.

× Q. 204. How long after this trial at the Fair-Grounds in Troy did these other visits occur?

A. Well, I really couldn't tell. I never made any account of it.

× Q. 205. Did you, on the occasion of those visits,  
985 see James Knibbs, the engineer of "The Arba Reade"?

A. I have seen him there. He was one of the parties I used to go to see.

× Q. 206. And on the occasion of those visits, you used to see him at his engine-house, did you not?

A. I did, at "The Arba Reade's" house.

× Q. 207. Mention, if you can, the years in which those visits occurred.

A. I don't think I can mention the years of the times I was there after the first time I was there, that  
986 is, the time of the trial.

× Q. 208. At the time that you and Mr. Bean were together at "The Arba Reade" engine-house, for what purpose were you examining "The Arba Reade"?

A. On one occasion, it was looking over the churn, or relief, or circulating valve, whichever you have a mind to call it, that he had attached to his pump.

× Q. 209. What was it on other occasions?

A. I think the other occasion was about making some change in the link that went up through the tank,  
987 — what we term the link connects the piston-rod of the engine and pump together, — or devise some means of getting at it handier.

× Q. 210. Did Mr. Bean come there for that special purpose?

A. I think not.

× Q. 211. At the time of your first visit to "The Arba Reade" engine-house, did you go to visit James Knibbs, or did you have some business to do connected with "The Arba Reade"?

988 A. Not either.

× Q. 212. You did not, then, see James Knibbs at that time?

A. Think I did.

× Q. 213. And you went to "The Arba Reade" house for the purpose of seeing him, did you not?

A. I went there because it was headquarters for the Amoskeag folks when we were in Troy, and I was connected with them.

× Q. 214. At the time of that visit, at what house  
989 did you stay in Troy?

A. I forget the name of the house. It was located somewhere near the river.

× Q. 215. Where did Mr. Bean stay?

A. He stopped at the same hotel. I am very sure it was not the American House.

× Q. 216. Who else of the Amoskeag people were in Troy at that time?

A. Mr. Bean, Mr. E. A. Straw, James Batchelder, and I think Henry Writner was there at that time: I  
990 won't be positive.

× Q. 217. Did you see any of these people besides Mr. Bean at "The Arba Reade" house at that time?

A. I did.

× Q. 218. Did they examine "The Arba Reade"?

A. Can't say they did; can't say they didn't examine it.

× Q. 219. Did you hear them say any thing about the device on "The Arba Reade" at that time, which you have called a relief valve or churn-valve?

991 A. No one but Mr. Bean, of our party.

× Q. 220. What did Knibbs say about it?

A. He showed it to me, said it worked well on all occasions that he had tried it, and relieved the pump.

× Q. 221. What else did he say?

A. He spoke of one or two occasions he had tried it, and told me where and why they put it on.

× Q. 222. Where did he say he had tried it?

A. I think he said he tried it when he was working his engine at a reservoir, and I think on one occasion  
992 at a fire: I am not quite positive. He had considerable to say about it.

× Q. 223. Did he say how long before this time he had used this relief valve?

A. He did not, not to me.

× Q. 224. You are sure of that, are you?

A. Quite sure.

× Q. 225. Did he tell you when this fire had occurred, and when this trial at the reservoir took place?

A. No: didn't give me any specified time, nor any  
993 time.

× Q. 226. Did he tell you whether this was the first relief valve he had made and applied to a steam fire-engine?



A. Didn't tell me any thing about that, that I recollect of.

× Q. 227. On the occasion of your other visits to James Knibbs at Troy, did you have any conversation with him about the relief valve on "The Arba Reade"?

A. I don't think or recollect there was any thing  
994 said between he and I about the relief valve but once after that.

× Q. 228. What did he say then?

A. Said he understood the Amoskeag folks was using of it.

× Q. 229. When was that?

A. On one of my visits to Troy.

× Q. 230. How long after your first visit did this occur?

A. I can't tell; after they commenced using it  
995 there; I think it was about the time I went to Syracuse; I can't say positive.

× Q. 231. In what year was that?

A. Let me look in that book, and I will tell you in about half a minute.

× Q. 232. No; I want you to tell me without.

A. I can't tell exactly.

× Q. 233. You say "The Arba Reade" took no part in the trial on the Fair-Grounds in the city of Troy?

A. Not either of the two days of that trial that I  
996 was there.

× Q. 234. And James Knibbs, then, had nothing to do with that trial?

A. I don't think he did directly.

× Q. 235. What connection is there in your mind between this trial on the Fair-Grounds and your visit to "The Arba Reade" engine-house at that time, which makes you willing to state that the conversation with James Knibbs about the relief valve took place at that  
997 visit, and not at a subsequent visit?

A. On account of Mr. Bean having a little trouble with "The Huron" at the trial.

× Q. 236. What had that to do with your memory about "The Arba Reade"?

A. Because I saw on "Arba Reade" what we needed on "The Huron" at that trial.

× Q. 237. What was the trouble that Mr. Bean had with "The Huron"?

A. Running the water low at one of the trials, and  
998 the time we had orders to stop the stream, stop this engine, he had to open the flood valve from his main pump into the boiler to get water into the boiler.

× Q. 238. How would the device called the "relief valve" have removed this difficulty?

A. By opening of it, and relieving the main pump under operation, and feeding water into the boiler with the feed-pump.

× Q. 239. Was this difficulty with "The Huron" talked about among fire-engine people at the time of  
999 the trial at the Fair-Grounds, to your knowledge?

A. Well, there was something said about the mistake that was made there, — some talk about it.

× Q. 240. Where did you hear this talk about it?

A. At the time of and at the trial.

× Q. 241. Did Mr. Knibbs witness the trial?

A. Think he was there a portion of the time, but not all.

× Q. 242. Did he say any thing about having a device then actually in use upon "The Arba Reade" which would remedy this difficulty with "The Huron"?  
1000

A. He did not to me at that time.

× Q. 243. Did any one say that there was a device on "The Arba Reade" which would remedy this difficulty?

A. Well, not particularly this difficulty; but Mr. Bean called my attention to it at the engine-house, and made the remark that "it was a dumb good thing."

× Q. 244. Did James Knibbs make any secret of  
1001 this relief valve or churn valve which he placed on "The Arba Reade"?

A. Didn't seem to, to me.

X Q. 245. And the Amoskeag people and other people connected with steam fire-engines had free access to "The Arba Reade" engine-house, did they not?

A. I couldn't say as to that. I went in and out when I pleased.

× Q. 246. You don't know whether the other  
1002 Amoskeag people had the same liberty?

A. I think very likely they did.

× Q. 247. What other people connected with steam fire-engines did you see having free access to "The Arba Reade" engine-house at the time of this visit?

A. I didn't see any other people having free access. I wasn't around there much, was there some.

× Q. 248. And you saw no one else there at the time of this visit?

A. I saw parties there that I supposed were mem-  
1003 bers of their company. There might have been outsiders there, but I don't know: I didn't take particular notice who were in there.

× Q. 249. Did James Knibbs tell you where he got the idea of this relief valve or churn valve which he  
had applied to "The Arba Reade"?

A. He told me why he put it on.

× Q. 250. Did he tell you he invented it?

A. He told me it was something he got up to put on "The Arba Reade,"—that was the remark he  
1004 made.

× Q. 251. Who else was present at that time?

A. Don't recollect there was any one present that heard our conversation; don't think there was.

× Q. 252. And that is all that you remember he said about how he got the idea?

A. He told me why he put it on.

× Q. 253. Did he tell you that it was his own original idea?

A. Well, I don't know as he told me in so many  
1005 words; but he says, "Here is something I have got up to relieve this pump when we are working through one line of hose." He gave me to understand he got it up, or I did understand.

× Q. 254. Did he tell you whether, or not, he had made any unsuccessful, or partially successful, experiments with such relief valves before he put the one on "The Arba Reade" which you saw there?

A. Well, I don't recollect whether he did, or not. My impression is he did not.

1006 [Adjourned.]

AUGUST 8, 1879.

× Q. 255. At the trial of the engines at the Fair-Grounds in Troy, did you have any thing to do with running "The Huron," or the third-class engine which you say was there?

A. No, nothing particular to do with it.

× Q. 256. Was it not your business to operate the engines sent by the Amoskeag Company, and show how they worked?

A. It was, on delivery of engines to parties where they were ordered.

× Q. 257. Prior to the time of this trial, what engines had you worked or operated without assistance from any one else?

A. The "Little Giant," "Pacific," and the second-class engine we had there at that trial.

× Q. 258. When was the trial of "The Pacific"?

A. 4th of July, 1860.

1008 × Q. 259. Prior to that time what engines had you assisted in constructing?

A. I don't recollect any particular engine by name.

× Q. 260. When working in the shops of the Amoskeag Company, what did you do prior to July 4, 1860?

A. Worked in what we call the "finishing-room."

× Q. 261. Was that work of such a character as to increase your knowledge of the construction and operation of steam fire-engines?

1009 A. It was.

× Q. 262. How did it increase your knowledge of their operation?

A. To learn how they were made, — see how they were made.

× Q. 263. At the time of this trial on July 4, 1860, did you have as perfect a knowledge of the construction and operation of steam fire-engines, as they then existed, as you had afterwards?

A. I did not.

1010 X Q. 264. State now, if you please, just what occurred at the trial of "The Pacific" at Montpelier on that day.

A. I don't know as I can state just what occurred, — we had a general trial there.

X Q. 265. Who run the engine, you, or Mr. Bean?

A. Bean part of the time, and I part of the time.

X Q. 266. How long a line of hose did you use?

A. I should judge from 800 to 1,200 feet.

X Q. 267. Can you remember just what attachments there were upon that engine for operating it in all its parts, and just how they looked, so as to be willing to swear that there were just certain parts which you can name, and no others?

A. It was a long time ago for me to swear positively just how they looked.

Answer objected to by counsel for complainant as not being the exact language used by witness in answer to the question; the witness having said, "It was a long time ago for me to swear positively just how every part looked."

Complainant's counsel here requests the witness in future answers to questions put to him, to see that the examiner understands him correctly; and, if he finds the examiner misunderstands him in his answers, to correct that misunderstanding on the spot, as the examiner has already stated that he took down the answer precisely as he understood it.

Defendants' counsel requests the examiner to state on the record that complainant's counsel, after the above version of the witness's language, added these words, and refused to have them put on the record: "I will see, on the re-direct examination, whether he said that, or not;" and defendants' counsel here gives notice that he will move to strike out the deposition of this witness, if any such question is put upon re-direct examination.

The examiner makes the statement that counsel for complainant made use of the words attributed to him by counsel for defendants; and the examiner also

1014 states to the Court that the answer above referred to stands on this record exactly as he understood it at the time of witness making the answer.

× Q. 268. Are you willing to swear positively to all the parts or attachments upon the steamer "Faxon," which was delivered in August, 1860, so as to give your testimony that there were exactly such and such parts or attachments which you can name for operating that engine, and no others?

A. Two leading hose attachments to her pump, an  
1015 attachment from the main pump to the feed-pump for the boiler. I think that is all the attachments there was made to that pump.

× Q. 269. Are you willing to make oath that there were no others?

A. Very positive there were no others.

× Q. 270. What makes you so positive?

A. Because I never saw it on the pump.

× Q. 271. What did you have to do with constructing this pump?

1016 A. Nothing very particular about the construction of this pump, or any other there, only to overhaul them occasionally.

× Q. 272. Did you ever see Mr. Bean in Troy on more than one occasion?

A. Don't recollect I ever did.

× Q. 273. Will you swear you never did?

A. No: I am very positive I never did.

× Q. 274. You have stated that, at the trial in Troy on the Fair-Grounds, Mr. Bean had some difficulty with "The Huron." Tell us now, if you please,  
1017 just what that was, and what Mr. Bean did.

A. He flooded his boiler with water, after the trial, through a short line of hose, by opening what we called, at that time, a flood valve, running from the discharge side of the pump to the boiler. He opened that, and neglected to close it; and then, at the time that the trial was going on for quantity, through a long line of hose, the pressure being more on the pump than it was on the boiler, he had so much water in his boiler he could  
1018 hardly move his engine; and, finding that to be the

case, he opened the blow-off valve, and had some trouble, and didn't close it himself, — burnt his wrist, and ordered the fire drawn. About the time he ordered the fire drawn, I managed to close it by pulling my right hand back into my coat-sleeve. I managed to shut it off in that way.

× Q. 275. Otherwise "The Huron" ran well at the trial, did she not?

A. I should consider it so; very well indeed: gave,  
1019 I should judge, good satisfaction.

× Q. 276. Would this difficulty with "The Huron," of flooding the boiler, have occurred at the trial, if she had had an attachment upon her like the relief or churn valve which Knibbs put upon "The Arba Reade"?

A. I couldn't say whether it would, or not.

× Q. 277. If she had had such a relief or churn valve at the time of that difficulty, would her boiler have been relieved by opening it?

1020 A. That would not have relieved the boiler by opening of it.

× Q. 278. It would have made no difference, then, in the occurrence of this difficulty, or in the relief from it, whether the engine had, or had not, upon her a relief or churn valve?

A. It would, if it had been properly used.

× Q. 279. How would such a relief valve relieve the flooding of the boiler?

A. That would have taken the place of the flood-  
1021 valve and the relief valve; by opening it, he could pump water into his boiler with the feed-pump.

× Q. 280. After the difficulty had occurred, the attachment of a relief or churn valve would not have aided "The Huron," would it?

A. Not on that particular occasion, I don't know as it would.

× Q. 281. Do you not know that it would not have had any effect?

A. No, sir: I don't know that it would not.

1022 × Q. 282. Do you think of any effect it could have had?

A. What, this churn-valve?

× Q. 288. Yes.

A. In relieving the engine?

× Q. 284. Yes: in relieving the engine.

A. What is his question?

× Q. 285. Do you think of any effect the churn valve could have had in relieving "The Huron" of the difficulty you have mentioned after it occurred?

1023 A. I think I have made that statement once.

× Q. 286. Are not the boilers of engines flooded when they use feed-pumps, even if they have a relief valve, when the engineer leaves the feed-pumps open?

A. They can be flooded in that way.

× Q. 287. Mr. Bean's forgetfulness at this trial would have had the same effect, then, in causing the flooding of the boiler, even if she had a relief valve?

A. Would not have produced the effect as quick.

× Q. 288. Why not?

1024 A. Pressure wouldn't have been so great on the pump, and the feed to the boiler wouldn't have been so direct as it would through this flood valve.

× Q. 289. What connection, if any, is there in your mind between this difficulty with "The Huron's" boiler and your memory of time when Knibbs put a relief valve on "The Arba Reade"?

A. I think my attention was drawn to the relief valve on the "Reade" at that time on that day. On that time of the trial, on the day when this difficulty  
1025 occurred. It was one of the two days. I was there at that trial. I had this conversation with Knibbs about the relief valve on the "Reade." Also at that time conversation with Mr. Bean concerning the same valve.

Latter part of the answer objected to as not responsive, by counsel for defendants.

× Q. 290. Are you willing to swear that the conversation with Mr. Bean occurred after the difficulty with "The Huron's" boiler which you have mentioned?

A. I couldn't say whether it was after, or before.

1026 × Q. 291. Did the conversation occur after, or before, the difficulty with "The Huron"?

A. Some time during my stay in Troy, this conver-



sation occurred. I think it was after this trouble occurred.

× Q. 292. Did "The Arba Reade" play at the Fair-Grounds on either day of that trial?

A. Think not.

× Q. 293. Was she brought out to the Fair-Grounds?

1027 A. Well, that I couldn't say whether she was, or not.

× Q. 294. You say that several rotary-engines did not have upon them the pipe and plug-cock connecting the suction-tube with the square box above the pump, through which water passed to the gates. Give the names of the engines which did not have it.

A. "The Amoskeag," Manchester, N.H., "The Machigonne," of Portland; those I am positive about. There was one at Fall River and one at New Bedford  
1028 I think didn't have it; neither of those two didn't have it on, I think.

× Q. 295. About these last two you are not positive, are you, whether they had it on, or not?

A. Well, I am very positive they did not have it on.

× Q. 296. Did you not state at the end of your answer before the last, these words: "About these last two, I am not positive"? Recollect you are on oath, sir!

1029 Objected to by counsel for complainant, first, as being designedly frivolous; and, second, as trying to impeach the record of the examiner; and, third, the examiner having already taken the answer of witness upon the record, it is fair to presume the witness has directed the examiner to take all he designed to from the answer to each of the questions; therefore it is incompetent to make any further inquiry into that: and the answers must stand as evidence, unless the witness desires the examiner to change them before signing his deposition.

1030 A. You have got it there, as I have stated, have you not?

× Q. 297. Answer the question, if you please.

Question repeated.

Same objections, and the further objection that the question has already been answered, as the record will show.

A. I stated about those two engines all I positively recollected.

1031 X Q. 298. Did you, or did you not, say at the end of your answer that you were not positive about those two engines?

Same objections, and further as immaterial, because, if he did state what counsel for defendants suggests by his questions, he afterwards changed it, as he had a right to do, by directing the examiner to enter what he did enter as an answer to the question referred to.

A. Didn't you understand how I answered that question you asked?

X Q. 299. Question repeated.

1032 Objections repeated, and further objected to that witness's interrogative answer should be replied to by examining counsel before he presses the question further.

1033 Examining counsel replies to the witness by saying that he did distinctly understand his answer, and now remembers his very words; and at the end of that answer he said, "About these last two engines I am not positive;" and, before those words were taken by the examiner, complainant's counsel interrupted for the purpose of preventing them from being taken; and, further, that, while the witness was answering the 295th cross-question, and was about to continue after saying the words on the record, complainant's counsel again interrupted by saying, "Take that, and stop." Notice is now given that motion will be made to strike out the testimony of this witness on the ground that the cross-examination is interfered with, and the question is repeated.

A. I don't recollect whether I did, or not.

1034 X Q. 300. Are you willing to swear that those two engines sent to Fall River and to New Bedford did not have on them the pipe and plug-cock referred to?

Objected to because witness has already several times answered by saying they did not have those devices on.

Defendant's counsel renews his objection and notice.

A. I am very positive they didn't have them on.

× Q. 301. You are not willing to swear that they did not?

1035 A. Well, I have seen those engines a number of times, and I never saw it on them.

× Q. 302. What were the names of those engines?

A. I won't be positive what the names were.

× Q. 303. When were they delivered?

A. I think one of them was delivered in the latter part of 1859. The other one, I couldn't say when it was delivered.

× Q. 304. You didn't have any thing to do, then, with the delivery of these engines?

1036 A. I did not.

× Q. 305. Did you ever operate a rotary-engine?

A. I have.

× Q. 306. How often?

A. It would be impossible for me to tell you how often.

× Q. 307. If one of those rotary-engines manufactured by the Amoskeag Company, and having the pipe or plug-cock referred to, should be connected with a hydrant, and the water-gates should be closed,

1037 and the plug-cock left open, could the engine be started?

A. Yes.

× Q. 308. Where would the water go?

A. It would work over and over in the pump.

× Q. 309. It would go up through the pump, and then from the square box above the pump down through the pipe containing the plug-cock into the suction-pipe, and then up through the pump again, would it not?

1038 A. This pipe was something I never used; I don't know what effect it would have on the operation of the rotaries.

× Q. 310. You don't know, then, whether, or not, the water would work over and over in the pump if the engine was started while connected with a hydrant, the gates being closed and the plug-cock open? Is

that what you mean by saying you don't know what the operation would be?

A. Those pumps would work under most any circumstances.

× Q. 311. Question repeated.

Objected to as having been already fully answered.

A. Must be some motion in the pump, of the water.

× Q. 312. Where would the water go under those circumstances, the gates being closed, the plug-cock open, and the engine working?

A. You shut up all the outlets to those pumps, and they move, and move slow.

× Q. 313. Question repeated.

1040 Objected to as having been answered.

A. I couldn't answer that question any different than what I have answered it. I worked those engines with the discharge gates closed and the plug-cock closed, and never worked the engine on any occasion with that plug-cock open.

× Q. 314. How fast did the rotary-engines move with the gates closed and the plug-cock closed, when connected with a hydrant?

Objected to on the ground of indefiniteness, because  
1041 the examining counsel does not state whether the engine was driven under water, wind, or steam power, or under what degree of pressure, if any, of either; and, second, because it is generally believed that if either of those agencies are applied to machinery, they have something to do with the rapidity with which the machinery moves.

A. I couldn't tell you how fast she moved,—I know it moved.

× Q. 315. Say with fifty pounds pressure to the  
1042 square inch, and the throttle wide open and the vacuum-cock closed, how many revolutions would she make a minute, the water-gates and plug-cock both being closed?

Objected to as too speculative, unless examining counsel will state the number of square inches he employs in this enterprise, and also states whether the square inches are to be occupied by wind, water, or

steam; and because it does not give the size of the throttle-valve he proposes to use, or give the size of  
 1043 the vacuum-cock, or the diameter of the wheel, or other device, from which he proposes to get revolutions. If counsel shall state correctly these several things as to size, quantity, and so forth, the question will not be objected to.

A. I should judge she would run quite slow under that pressure. It wasn't very often I ran under that pressure of steam.

× Q. 316. At the times when you ran the engine with the gates and plug-cock both closed, the water-  
 1044 pressure gauge indicated a higher pressure, did it not, than when running with the same amount of steam-pressure and the water-gates open?

A. It indicated a higher pressure when they were closed,—some higher pressure.

× Q. 317. How much higher?

A. That I couldn't state.

× Q. 318. At those times while the engine was running very slowly, did she run smoothly with the gates closed?

1045 A. She did not.

× Q. 319. If, now, under the conditions mentioned, while the water-gates were closed and the engine was running slowly and irregularly with high water-pressure indicated, what would be the effect of opening the plug-cock?

A. I don't know: I never tried it on a rotary to see what the effect would be.

× Q. 320. What would prevent the water from at once passing down the pipe from the discharge to the  
 1046 suction, and thus allowing the engine to run more rapidly?

A. I don't know,—this to me was never represented to be a relief valve,—don't know what the consequence would be. I never used it for any purpose when the engine was in operation: what it would do, I don't know; I haven't found out.

× Q. 321. What is your opinion about it, as a practical engineer? and, from your knowledge of water

passageways connecting the discharge to the suction  
1047 sides of other pumps, what would it do?

Objected to because the witness has already given his opinion in the last answer; and because this witness was not put on the stand as an expert witness of any kind, but merely to state facts as to things and events that came within his observation during the times and at the places inquired about in his examination-in-chief; and, therefore, the inquiry is not cross-examination of the witness.

A. I don't know as I ever formed an opinion on  
1048 that subject.

× Q. 322. What sort of a relief valve was there on "Washington" No. 1, sent to Fond du Lac?

Objected to as assuming a matter that may, or may not, have existed within the memory or recollection of the witness.

A. It was a spring check-valve. I might call it that.

× Q. 323. Was it automatic?

Objected to as immaterial.

A. We call them angle valves, — angle shaped.

1049 × Q. 324. It opened, did it not, of itself, when the water-pressure reached a certain point, and closed again by the spring as soon as the pressure diminished below that point, by the escape of water?

Same objection.

A. Well, I never saw the valve open but once. I closed it down then, and pinned it.

× Q. 325. Who opened it on that occasion?

A. The pressure behind it.

1050 × Q. 326. This sort of valve which would open by pressure behind it was a new thing with the Amoskeag Company, was it not, at the time the "Washington," No. 1, was taken to Fond du Lac?

Objected to as immaterial and incompetent.

A. New thing to me. I don't know whether it was to them, or not.

× Q. 327. Was there any difficulty with "The Arba Reade" at the time of the trial you have mentioned in Troy?

A. Time of what trial in Troy?

1051    × Q. 328. Was there more than one trial?

Objected to as the witness has already stated he didn't think "The Arba Reade" was put on trial at the time when he was in Troy, at the trial on the Fair-  
Grounds.

A. I never was there but to one trial.

× Q. 329. Then, at the time of that trial, was there any difficulty with "The Arba Reade" that called for a remedy or alteration in her?

1052    Objected to as not within the scope of cross-examination, and as wholly immaterial for any purposes of this suit.

A. I never saw "The Arba Reade" on trial in Troy.

× Q. 330. I don't refer to her being on trial, and repeat the question only with reference to the time.

Same objection.

A. At the time of the trial I don't know as there was any occasion for any alteration in her then. I don't know about what she called for; I don't know what she had on her.

1053    Latter part of answer objected to as not responsive.

*Direct Examination resumed.*

Q. 331. If I understood you correctly on your direct examination, you stated you were acquainted with Nehemiah S. Bean of Manchester, N.H. I now ask you if you are personally acquainted with that gentleman?

A. I am acquainted with him.

1054    Q. 332. If you know, you may state where that gentleman now is.

A. He is present in this room.

Q. 333. About how long has he been in this room to-day during this examination?

A. About two hours and a half, or so.

Q. 334. During that time, what position has he occupied while questions were being put to you by defendants' counsel on your cross-examination? I mean by the term "position," whether sitting, or standing, on which side of the table, and near to whom?

1055    A. A sitting position most of the time, on the left-hand side of defendants' counsel.

Q. 335. State whether, during your cross-examination, you have seen him in consultation with defendants' counsel, now present.

A. I have.

Q. 336. Frequently, during that cross-examination to-day?

A. Yes.

Q. 337. State whether you saw Mr. Bean present yesterday, during the examination of the witness then on the witness-stand?

A. I did.

Q. 338. State, if you can, about how long he was present at this examination on yesterday.

A. I should judge about an hour after I came here.

Q. 339. When you entered this room yesterday you found Mr. Bean present at this examination, did you not?

A. I did.

1057 Q. 340. He is now present, is he not, walking to and fro, with big cane in hand, having just taken his seat by the left-hand side of defendants' counsel, on the opposite side of the table?

Objected to as trivial, and insulting to the dignity of the Court.

A. He is.

Q. 341. This is the same Mr. Bean who was master machinist, or superintendent of that department of the Amoskeag Manufacturing Company, at Manchester, 1058 N.H., where steam fire-engines were built during the time you were in the employ of that company, is he not?

A. He is.

Q. 342. And he is the same Mr. Bean referred to by you during your direct examination in this cause, is he not?

A. He is.

Q. 343. You were inquired of, during your cross-examination, about a steam fire-engine known as "The 1059 Lawrence;" did that engine contain a rotary or a piston or plunger pump, as its main water-pump for drawing and discharging water?



A. Piston-pump.

Q. 344. Where, and by whom, was that engine built, if you know?

A. At Lawrence, Mass., by Bean & Scott, or Scott & Bean. I don't know which was the head man of the firm.

Q. 345. Was that the same Mr. Bean now present  
1060 on the immediate left-hand side of the defendants' counsel?

A. Yes.

Q. 346. Is this "Lawrence" engine, referred to in your cross-examination, the same engine referred to in your direct examination under the same name?

A. It is. I understand it so.

Q. 347. Do you desire now to change any testimony on your direct examination with reference to that engine, or in any wise to alter or amend your evidence  
1061 in that direct examination with reference to it?

Objected to as incompetent.

A. I didn't give any at that time that I wish to change.

Q. 348. Do you wish to change any of it at this time?

Same objection.

A. No, I do not.

Q. 349. On your cross-examination you were inquired of concerning an engine known as "The Philadelphia:" is that engine, so far as you know, the same engine about which you gave evidence in your examination-in-chief in this cause?  
1062

A. I understood it to be the same.

Q. 350. Is there any thing in your examination-in-chief about that engine which you, at this present time, desire to change, alter, or amend?

Objected to as incompetent.

A. Only the addition of the statement that she had a pipe coming out of the base of her air-chamber connected with the boiler, as one of the means of feeding of her. The next time I saw her was in Philadelphia, and that pipe wasn't on it at that time.  
1063

Answer objected to by defendants' counsel as not

responsive, and not matter properly brought out on re-direct examination.

Q. 351. What year, if you remember, was it, that you afterwards saw that engine in Philadelphia with the device named in your last answer not upon it, as you saw it on trial on the Common in the city of Bos-

1064 ton?

Objected to as not properly re-direct; and as the witness is incompetent to testify in regard to what that engine had, or had not, upon her at the trial.

A. I think it was in 1861, at the time I took the "Southwark" engine on, the early part of 1861, I am quite positive.

Q. 352. "The Southwark" was an engine built by whom?

A. The Amoskeag Manufacturing Company, Man-  
1065 chester, N.H.

Q. 353. What was its main water-pump? rotary, piston, or plunger?

A. We generally termed them piston-pumps.

[Noon recess.]

Q. 354. In what year, if you recollect, was it, that steam fire-engine "Huron," built for Detroit, Mich., was in Troy, N.Y., on exhibition or trial at the Fair-Grounds, as stated by you on cross-examination.

A. In the fall of the year 1860.

1066 Q. 355. In what year was it, if you remember, that you took the steam fire-engine from the Amoskeag Manufacturing Company's shops in Manchester to the city of Syracuse, N.Y., when you stopped in Troy, N.Y., and paid your respects to Mr. James Knibbs, engineer of the steam fire-engine "Arba Reade," as stated by you on your cross-examination?

A. I can't recollect. I think it was in 1864 or 1865, or thereabouts, it might have been. I can't recollect. I took out so many engines I can't recollect

1067 the time, to be positive.

Q. 356. You think it was in the year 1864 or 1865, as you have stated in your last answer. Have you any doubt but it was one year, or the other, of those dates?

A. I have no doubt but that it was one year, or the other, of those years.

Q. 357. Whichever it was, was it that time that Knibbs told you that he understood the Amoskeag Manufacturing Company were using his invention then upon "The Arba Reade," which you, in some of your  
 1068 answers on cross-examination, have denominated as a "relief valve" or "churn valve"?

A. It was on that occasion.

Q. 358. Counsel for defendants, during your cross-examination, seemed to put a great deal of stress upon the fact that you, some time or another in your business-life, might have seen James Knibbs once or more times in Troy, or somewhere else; and he asked you a great many questions about that. Do you consider it a crime, or that you were violating any of the laws of  
 1069 the country, by visiting James Knibbs whenever you pleased?

A. I do not.

Q. 359. You frequently saw Mr. Knibbs at "The Arba Reade" engine-house, Troy, did you not, after the fall of 1860?

A. Quite a number of times after that time.

Q. 360. In the fall of the year 1860, and while you were in Troy with Mr. Bean, during the test or trial of certain steam fire-engines, you saw Mr. Knibbs at "The  
 1070 Arba Reade" engine-house, and he showed to you, and explained to you, an invention and device then upon "The Arba Reade" engine which you, in answer to X Q. 208, named as a "churn or relief or circulating valve, whichever you have a mind to call it," did he not?

Objected to as leading.

A. He did.

Q. 361. State whether that is the same invention, or device, which you and Mr. Bean, the gentleman now  
 1071 present at left-hand side of defendants' counsel, saw upon that engine during the time you were in Troy at that trial or test of engines, and which you and Mr. Bean had conversation about in the house of that engine, when, as you say on your cross-examination, Mr. Bean, after such examination, stated to you "that is a dumb good thing," or words similar.

Same objection.

A. It was.

1072 Q. 362. Defendants' counsel, on your cross-examination, appeared very desirous to know where you staid over night or took your meals while at Troy, on that occasion. Do you remember the name of the hotel at which you stopped during that visit to Troy?

A. I do not.

Q. 363. You are sure, are you, that you stopped at some hotel there?

A. I am.

Q. 364. Did Mr. Bean stop at the same hotel during that time?

1073 A. Very sure he did.

Q. 365. In answer to  $\times$  Q. 216, you state that Mr. Bean, Mr. E. A. Straw, and James Batchelder, were in Troy on that occasion. Who was Mr. E. A. Straw, if you know? and where does he live?

A. He was at that time agent of Amoskeag Manufacturing Company, and lived at Manchester, N.H.

Q. 366. Who is this Mr. James Batchelder? In whose employ was he at that time, and where did he reside, if you know?

1074 A. He was a man who worked in the erecting shop, in erecting steam fire-engines, and lived in Manchester, N.H.

Q. 367. In whose employ was he at that time?

A. In the employ of the Amoskeag Manufacturing Company.

1075 Q. 368. So far as you know, state whether those persons during that trial test at Troy, in the fall of the year 1860, had the same opportunities that you had of visiting "The Arba Reade" engine-house, and of seeing and examining that engine.

A. So far as I know, they did.

Q. 369. Counsel for defendants, in your cross-examination, seemed very anxious to know from you what Mr. Knibbs had said to you during the time of that trial test, about the invention and device which he showed to you on "The Arba Reade," and which you have explained. Did you hear Mr. Knibbs say at

that time whether he considered his invention in a completed and perfected condition, in which he desired to make no changes, or any thing of that kind?

1076 Objected to as leading, and fully inquired about on cross-examination.

A. I did not.

Q. 370. Do you remember whether he said any thing to you on that occasion about being engaged in experiments to test the value or utility of that invention, or any thing of that kind?

Same objection.

A. I don't recollect.

1077 Q. 371. How many days' time were occupied by Mr. Bean, Mr. Straw, Mr. Batchelder, and yourself, for the trial tests of the engines to which you refer, at the Fair-Grounds in Troy?

A. Two days, I think.

Q. 372. At the time Mr. Bean said to you in "The Arba Reade" engine-house that that invention and device which Knibbs had shown to you, and which you and Bean had together examined, that it was a "dumb good thing," did Mr. Bean say, or pretend to you by words or signs, or any other devices known among men, that he had ever seen, or ever knew of, or ever heard of, that device and invention, before that very hour when you and he examined it in that engine-house?

1078

Objected to as leading and incompetent.

A. Don't think he ever did,—never did to my knowledge.

Q. 373. Had he said any thing to you of that kind at that time and place, would you, or would you not, have remembered it full as well as you did when, in answer to × Q. 243, you said: "Mr. Bean called my attention to it at the engine-house, and made the remark, 'It was a dumb good thing' "?

1079

Objected to as incompetent.

A. Think I should.

Q. 374. Have you any doubt about it?

Same objection.

A. Not in the least.

Q. 375. Defendants' counsel, in your cross-examination, asked you if James Knibbs told you "where he got the idea of this relief valve or churn-valve which he had applied to 'The Arba Reade.'" You answered, "He told me why he put it on." Defendants' counsel having omitted to ask you to state what Knibbs said to you about as to why he put that invention, or device, on "The Arba Reade," I will ask you to state what you recollect about it.

A. Put it on to relieve the pump or relieve the hose, while they were working on a long line at a fire.

1081 Q. 376. Did you and Mr. Knibbs at that time have considerable conversation upon that subject?

A. Not very long conversations, we had.

Q. 377. You understood from Mr. Knibbs what he was trying to accomplish by that device at that time?

A. I did.

Q. 378. Defendants' counsel, in  $\times$  Q. 258, asked you, "When was the trial of 'The Pacific'?" Your answer was, "4th of July, 1860." State whether that is the same steam fire-engine which was tested or used  
1082 at Montpelier, Vt., by Mr. Bean, the gentleman now sitting at the left of defendants' counsel.

A. It was.

Q. 379. And was that the place where it was used and tested on the 4th of July, 1860?

A. Montpelier, Vt., was the place.

Q. 380. State whether that is the same engine of that name about which you testified in your examination-in-chief in this cause.

A. It is.

1083 Q. 381. If there be any thing which you testified to concerning this steam fire-engine "Pacific," on your direct examination in this cause, that you desire to change, amend, or modify in any respect, you may do so now.

A. I don't know of any thing.

Q. 382. On your cross-examination, defendants' counsel asked you about a steam fire-engine named "Faxon," which was delivered in August, 1860, as stated by him in  $\times$  Q. 268. Is that the same steam

1084 fire-engine of the same name, about which you testified in your direct examination in this cause?

A. It is.

Q. 383. If you remember any thing that you testified to about that engine on that occasion in your direct examination, which you desire to change or modify at this time, you may do so now.

Objected to as incompetent.

A. I don't recollect of any thing.

Q. 384. I understood you, on your cross-examination, to say, in substance, that Mr. Bean, now sitting in close proximity to defendants' counsel, was badly burned or scalded during the trial-test of the steamer "Huron," on the Fair-Grounds in Troy, in 1860; and that, to save him from further danger and to preserve him for future usefulness, you went to his aid by pulling the sleeve of your coat over your hand, and took hold of some "valve" or "plug-cock" handle to shut the same. For what purpose was it that you closed that valve, whatever it may be? and what did you  
1086 shut off, when you say, in answer to X Q. 274, "to shut it off"?

A. To save the boiler from burning. It had a heavy fire under it. I shut up the blow-off valve.

Q. 385. What did you shut off,—steam, water, wind, or what,—when you closed the valve?

A. Water,—hot water.

Q. 386. You closed the valve, then, to stop the flow of water into the boiler, did you?

A. To stop the flow of water out of the boiler.

1087 Q. 387. That valve was known as a "blow-off" valve, was it, which you closed on that occasion?

A. It was.

Q. 388. By what was it Mr. Bean was burned on his wrist, on that occasion?

A. Hot water, I suppose.

Q. 389. Did Mr. Bean, on that occasion, appear to be frightened or alarmed over the mishap to that engine?

1088 A. No more than usual a man would under those circumstances, as I know of.

Q. 390. To whom did Mr. Bean, on that occasion, give the order to draw the fire in that engine?

A. Mr. Batchelder, I think, was firing for him: I think he was the man he gave the order to.

Q. 391. In what was located the valve which you call the "flood valve"? Was it in a pipe in the pump itself, or in the boiler?

A. In the pipe leading to the boiler.

Q. 392. Leading from what to the boiler?

1089 A. From the discharge or pressure side of the pump.

Q. 393. Of the main water-pump?

A. Yes.

Q. 394. Then this pipe and "flood valve" were located outside of the pump, and connected the pressure side of the main water-pump to the steam-boiler. Is that it?

A. That's it.

Q. 395. Who had the exclusive charge, if you know, of the trial of that engine on that occasion?

A. Mr. Bean.

Q. 396. State whether, or not, many persons were present, so far as you know, witnessing the trial-tests of those engines.

A. There was.

Q. 397. What other engines, if you remember, and where did they come from, were present during those two days of trial-tests, and that took a part in the same?

1091 A. Lee & Larnard of New York City had two; "Southwark Hose" of Philadelphia of the same build; Seneca Falls steam fire-engine, of Seneca Falls, N.Y., built by Silsbee.

Q. 398. Were there any engines at that trial that had rotary main water-pumps? if so, how many, and where did they come from, if you know?

A. Those four had rotary water-pumps.

Q. 399. What four engines had rotary water-pumps?

1092 A. The four I mentioned in my last answer.

Q. 400. State whether they had, on their main



water-pump, a pipe and "*plug-cock*," which, on your direct examination, you denominated a "*by-pass*," for passing water beyond the pump on a fire, under hydrant pressure.

A. I didn't see any on any one of them.

Q. 401. Did you hear from anybody, — Knibbs or anybody else in Troy, — on that occasion, any thing about a "*by-pass*," such as you have described as being  
1093 upon five or six of the rotary water-pump engines, built by the Amoskeag Manufacturing Company, in the years 1859 and 1860?

A. I did not.

Q. 402. In  $\times$  Q. 287, defendants' counsel uses the following words: "Mr. Bean's forgetfulness at this trial." Do you know, of your own knowledge, whether Mr. Bean forgot to perform any duty on that occasion?

A. I should judge he neglected to close this flood  
1094 valve after supplying the boiler with water.

Q. 403. In your answer to  $\times$  Q. 289 you state, "It was one of the two days I was there at that trial I had this conversation with Mr. Knibbs about this relief valve on 'The Arba Reade;' also at that time conversation with Mr. Bean concerning the same valve." Can you state which of those two days it was that you had the conversation referred to in that answer with Mr. Knibbs and Mr. Bean?

Objected to as the matter quoted was not responsive,  
1095 and was objected to for that reason; and is here put to the witness in a leading form.

A. No.

Q. 404. Do you know what the object or purpose was of having the trial-test at that time of those engines on those grounds?

A. To test the quality of the engines of the different builders.

Q. 405. Do you recollect of seeing Mr. E. A. Straw present at that trial, on one or both of those days?

1096 A. I recollect of seeing him there.

Q. 406. State whether, during your cross-examination, complainant's counsel, now present conducting

your re-direct examination, has interrupted you in your answers to any questions, so as to prevent you from telling the truth, the whole truth, and nothing but the truth, or in any manner to prevent this examiner from taking down on this record your answers to cross-questions put to you by defendants' counsel, now present?

1097 Objected to as incompetent, as the record speaks for itself.

A. He has not.

Q. 407. State whether, or not, this examiner has read to you each answer to each question after he had written the same down on this record; and whether the answers so taken down and read to you by him are the answers to those questions, word for word, that you designed that he should take down for your answers on this record.

Same objection, and as leading.

1098 A. They are. He has.

Q. 408. State, as near as you remember, when and where you saw Mr. Knibbs for the last time.

A. I couldn't state the time. The last time I saw him was in Troy.

Q. 409. About how long ago was that?

A. I think it was the time I took an engine to Albany.

Q. 410. How long ago was that you took an engine to Albany?

1099 A. I couldn't tell you the time.

Q. 411. About how many years ago was it, Mr. Furlong, if you know?

A. It might have been eleven years ago.

Q. 412. In your answer to  $\times$  Q. 309, you say, "This pipe was something I never used." State whether you meant that you had never used that pipe for any purpose, or that you had never used it while the main water-pump was being operated by steam-power.

1100 Objected to as leading.

A. While the main water-pump was in operation.

Q. 413. Then, if I understand you correctly, you did use it sometimes when neither the steam part or the main water-pump were in operation; is that it?

Same objection.

A. Well, I should want to say only on one occasion I ever used it, if I understand the question right. I should like to have you read it.

Question re-read to witness, at his request.

1101 That's right, — my answer.

Q. 414. And how, and for what purpose, did you use it on that occasion?

A. After making attachments to the hydrant, before we had sufficient steam to start the pump in operation.

Q. 415. And what was done after you had attached it to the hydrant, and did not have sufficient steam to operate the engine, as to the use of water, if any thing?

1102 A. I opened the plug-cock in this "*by-pass*" for the water to pass through that, round the pump, through the hose, on to the fire.

*Cross-Examination resumed.*

× Q. 416. How long did you allow the plug-cock to remain open on that occasion?

A. I don't recollect.

× Q. 417. Did you leave it open until steam was up and the engine working, or close it before the engine began to work?

1103 A. Closed it as soon as we had sufficient steam to start the engine; and I can't say what time that was.

× Q. 418. Did you wait until the motion of the engine increased the flow of water from the hose beyond the amount which had been flowing by hydrant pressure only?

A. I waited until we had sufficient steam to start the engine, and then closed it.

1104 × Q. 419. What effect did the closing of the plug-cock on that occasion have upon the volume of water flowing from the hose?

A. The time I closed it, it stopped the flow of water until I set the engine in motion.

× Q. 420. When you closed the plug-cock, no water flowed from the hose until the engine started: is that it?

A. That's it. It cut off the supply on the hose, in a great measure.

× Q. 421. If you had left the plug-cock open after the engine commenced working, and kept it open until  
1105 the engine came to full speed, what would the effect have been?

A. I don't know. I am telling what I *did* do. I am not telling what I might have done.

× Q. 422. Why did you close the plug-cock?

A. Because I wanted to move the engine.

× Q. 423. How did that help it?

A. I never tried it to see whether it would help it, or not.

× Q. 424. Do you mean to say that you did not  
1106 know that if you left that plug-cock open until the engine attained full speed, you could not throw a stream of water as far as you could if you closed it?

A. I haven't said so yet.

× Q. 425. Did you know that?

A. I never tried it.

× Q. 426. From your knowledge of the working of steam fire-engines, did you not know at that time that if you left the plug-cock open until the engine attained full speed, you could not throw a stream of water as  
1107 far as if you closed it?

Objected to on the ground that witness has been inquired of on that subject by defendants' counsel a great many times during cross-examination; and the witness has as many times said, in substance, he never used it for any purpose indicated in the question, and don't know any thing about it: it is not, therefore, a proper re-cross-examination of the witness; and, 2d, not what the witness might or could have done, had he known about it at the time,—between the 1st of  
1108 July, 1859, and the 1st of January, 1863,—but what he *did* do as to the matter inquired about.

A. If I had been satisfied that this would relieve pressure in the pump by opening or leaving this valve or cock open, I should have put it on to "The Lawrence" at that time, or after that. We needed it there very much.

× Q. 427. A pipe and plug-cock similar to the one just mentioned could have been applied to "The Lawrence," could it, between the discharge chamber and  
 1109 the suction, so as to relieve it? I mean, applied in the same way as it was applied to the rotary-engine about which you have just been testifying.

Complainant's counsel objects to the first paragraph of the question, on the ground that the question before the court is, not what might or could have been done by anybody having sufficient knowledge or information, but what was done between the 1st of July, 1859, and the 1st of January, 1863, with reference to the matter inquired about. To the last paragraph of the  
 1110 question he objects, on the ground that it states hypothetically that which could not in any wise be done on a piston or plunger pump engine.

Objected to by counsel for defendants as prompting the witness.

A. It never *was* attached to it, to my knowledge, up to the time you are speaking of.

× Q. 428. Question repeated.

Objections repeated.

A. I don't know what *could* have been done. I am  
 1111 telling you what *was* done.

× Q. 429. You said, in answer to × Q. 427, in speaking of this pipe and plug-cock, "If I had been satisfied that this would relieve pressure in the pump by opening or leaving this valve or cock open, I should have put it on to 'The Lawrence' at that time." I ask you now, whether that would have relieved "The Lawrence," if you had done it, in the same way that the relief valve which you saw on "The Arba Reade" would have done if applied; and, if not, state why not.  
 1112 Objected to because it is self-evident, that, if the witness *had* applied to the steam fire-engine "Lawrence" the invention and device invented by Mr. Knibbs, and put on "The Arba Reade" by him, the same effect would have been produced in "The Lawrence" as was produced in the "Reade;" but the question is, *Was* it done by anybody previous to the invention by Mr. Knibbs? The question is, therefore, incompetent and improper in form and in substance.

Notice of motion is again given to strike out the  
 1113 entire deposition of this witness on the ground of interference.

A. I don't know. I never applied it. I don't know what effect it would have on "The Lawrence." I don't know what effect it would have on this rotary. I didn't know what effect it would have on the rotary-pump. I never applied it there, only as a "by-pass."

× Q. 430. You don't know, then, whether a two-inch copper pipe with a plug-cock in it, applied between the discharge chamber and the suction, and  
 1114 exactly similar in all respects, except length perhaps, to the pipe and plug-cock upon the rotary just mentioned, would have had the effect of relieving "The Lawrence" if applied to that engine?

A. If I had applied it I should have known.

× Q. 431. I now repeat × Q. 426, not yet answered.

× Q. 426, re-read to witness.

Objections to question 426 repeated; and, further, because the question was answered.

1115 A. I never tried it to see whether it would, or not.

× Q. 432. I ask you, from your knowledge of steam fire-engines, whether you did not know that that pipe connecting the discharge-chamber above the rotary-pump with the suction-pipe below it, would, if left open, prevent the engine from throwing a stream of water as far as it would if you closed the plug-cock? I don't ask you about what you *did*, but about what you *knew*, and ask a direct answer.

A. My knowledge of steam fire-engines in 1859 was  
 1116 limited. This trial you speak of now was in 1859, and up to that time I didn't know the effect this would produce.

× Q. 433. What was the name of that engine?

A. "Eagle" 3.

× Q. 434. What makes you have no doubt that the "Syracuse" engine was delivered in 1864 or 1865?

A. Well, I don't know. I should judge it was about that time. I don't know as I have any particular reason to think it was about that time, only I should  
 1117 judge that was about the time it was delivered.

× Q. 435. Since your cross-examination of yesterday have you refreshed your memory about this or any other fact concerning about which you have testified?

A. No way in particular.

× Q. 436. Has Mr. Norton told you there were certain things about which he would like to ask you?

A. He has not. I might add to that, he has forbidden me to speak to him about this case at all.

× Q. 437. And have you refrained from talking  
1118 with any one about it since I cross-examined you?

A. I have had no information from any one. On one or two occasions, perhaps, the case has been spoken of, but not in any details or points.

[*Adjourned.*]

AUGUST 9, 1879.

× Q. 438. You say, in answer to × Q. 432, "my knowledge of steam fire-engines in 1859 was limited. This trial you speak of now was in 1859, and up to  
1119 that time I didn't know what effect this would produce." Tell me now, how long it was after that trial that you acquired sufficient knowledge of steam fire-engines to know what would be the effect of leaving open the plug-cock in the pipe connecting the discharge-chamber and suction-pipe together while the engine was running at full speed.

A. To what engine do you allude to?

× Q. 439. I allude to any rotary-engine which had on it the pipe and plug-cock described.

1120 A. I don't know what effect it would have. I never tried it; never used it after that time.

× Q. 440. You wish the Court to understand, then, that you have never, up to this time, acquired sufficient knowledge of steam fire-engines to know what the effect would be upon the steam thrown by a rotary-engine while running at full speed, to open the plug-cock referred to?

Objected to as immaterial and inadmissible; and, further, because the witness has repeatedly, in his cross-  
1121 examination, stated that he never opened the plug-cock referred to under the conditions stated in the question.

Further, *what* might have been done, and what was actually done, are entirely independent questions. What *was* done is proper to inquire into; what *might* have been done, but was *not* done, is irregular, and improper to inquire about.

A. Never using it on such occasions, I couldn't say what the effect would be.

Defendants' counsel here objects to all the testimony  
1122 of this witness in regard to the construction and parts of steam fire-engines, the witness being, by his own confession, incompetent to tell the uses or effects of the simplest parts of such engines.

× Q. 441. At the time of the trial of engines at the Fair-Grounds in Troy, when you saw the difficulty which you have described in running the engine "Huron," did it at once occur to you that there was upon "The Arba Reade," at that time, a device which would remedy that difficulty?

1123 Objected to because the witness has already repeatedly testified on cross-examination that he could not tell whether it was before, or after, the almost disastrous experiments of Mr. Bean with the "Huron" engine at Troy, that he saw upon the engine "Arba Reade" the invention about which witness has testified as having been shown to him by Mr. Knibbs, and about which witness and Bean had the conversation testified about in "The Arba Reade" engine-house.

Defendants' counsel again objects to the instructions  
1124 given to the witness under the cover of objections.

A. After that device was explained to me that was on the "Reade," I thought it would obviate that difficulty.

× Q. 442. Question repeated.

Objection repeated, and further objected to as having been answered.

A. I couldn't answer that question any different from what I have answered.

× Q. 443. You do not remember, then, that any  
1125 such idea occurred to you at that time?

A. Don't recollect.

× Q. 444. At the time when James Knibbs showed



you the device called a relief valve on "The Arba Reade," did it occur to you that that relief valve would remedy the difficulty with "The Huron," alluded to?

A. I think it did.

× Q. 445. You think, then, the difficulty with "The Huron" occurred before James Knibbs showed you this device?

1126 A. I couldn't say positive whether it did, or not.

× Q. 446. What makes you say, then, that you think it occurred to you at the time he showed you the relief, that this would remedy the difficulty with "The Huron"?

A. I think he advanced the idea.

× Q. 447. Then you *do* think, do you, that the difficulty with "The Huron" occurred before this time?

A. This difficulty occurred during the trial at Troy,  
1127 and the conversation with Knibbs and I occurred during the same trial.

Latter part of answer objected to by counsel for defendants, as not responsive.

× Q. 448. How do you know that? What circumstance makes you willing to swear that it was at that time?

A. Because it was the only time I was ever in Troy with Mr. Bean, — knowing he was there at that time.

× Q. 449. State now just what Knibbs said when  
1128 he first showed you that relief valve, — tell the circumstances, and how he happened to show it to you.

A. I don't know as I can state the exact words he used.

× Q. 450. State, then, as near as you can.

A. He stated, — I don't know exactly how to word it, — I don't know as I can state the circumstances any more than I have stated.

× Q. 451. Did he call you up to the engine to show it to you?

1129 A. Called my attention to it.

× Q. 452. Did he speak of it before he showed it to you?

A. I don't recollect, — he might, or might not.

× Q. 453. If he had spoken of it before he showed it to you, you would have remembered, would you not?

A. I don't know why I should. No: I don't know whether I would, or not.

× Q. 454. When you first saw that device on "The Arba Reade," what did you say?

1130 A. I asked Mr. Knibbs if he thought it would relieve the pump, and not obstruct the receiving side.

× Q. 455. What did you say then?

A. I don't recollect that I said any thing further.

× Q. 456. What did you think of that device at that time when you first saw it?

A. I don't know as I can tell what I think, — I don't know as I have a right to, — I don't know what I did think.

× Q. 457. Did you think it was a very clever and  
1131 useful device at that time?

A. Can't tell what I thought about it. I had no experience with it, — never had seen it worked.

× Q. 458. You don't remember, then, that during this visit to Troy the idea occurred to you that the relief valve upon "The Arba Reade" was a very clever or useful device: is that what you mean by saying you can't tell what you thought about it?

Complainant's counsel objects to the question on the ground that there is nothing known in mechanics as a  
1132 "*clever device*;" the question is therefore indefinite and incompetent. 2d, It is difficult to know from examining counsel whether he has the witness under direct examination or cross-examination.

A. I can't tell what I thought about it, — never saw it in operation, — couldn't tell how it would work.

× Q. 459. What did Knibbs say to you in answer to your question whether it would relieve the pump and not obstruct the receiving-side?

A. Said it worked well as far as he had experi-  
1133 mented on it.

× Q. 460. He said he had experimented on it, did he?

A. That is the answer he made to me.

× Q. 461. While you were in Troy at that time,

did you tell any one about this device on "The Arba Reade"?

A. Don't think I had any thing to say to any one about it, with the exception of Mr. Bean and Mr. Knibbs.

1184 X Q. 462. What did you say to Mr. Bean about it?

A. We were looking of it over, — don't know as I had any thing to say further than what I said in my previous answers.

X Q. 463. After you returned to Manchester, did you tell any one about this device which you say you had seen on "The Arba Reade"?

A. I don't recollect that I did.

1185 X Q. 464. You don't remember that you thought it of sufficient importance to mention to any one?

A. Don't recollect I ever mentioned it, or thought much about it, till after I saw it in the pump for an engine that went to Troy.

X Q. 465. When was that? and what engine?

A. I think the name of the engine was "Osgood." I couldn't really tell the time. You can refer to the book, probably, and find out when the "Osgood" was built.

1186 X Q. 466. Do you remember that Mr. Bean said any thing else about the device on "The Arba Reade," except the words attributed to him by you?

A. I do not, that he did at that time.

X Q. 467. And you are willing to swear, are you, that at that time, if Mr. Bean "had made use of any word or gesture or sign known among men" indicating that he had seen that device before, you would remember it now?

A. I think I should.

1187 *Direct Examination resumed.*

Q. 468. The defendants' counsel, at X Q. 436, was pleased to ask you, "Has Mr. Norton told you there were certain things about which he would like to ask you?" Your answer was, "He has not: I might add to that, he has forbidden me to speak about this case

at all." At what time during your examination as a witness in this cause, did that take place? Was it *before*, or *after*, the completion of your examination-in-chief, or while you were on the witness-stand on cross-examination?

A. On the witness-stand, on cross-examination, I think.

Q. 469. How many days ago was it?

A. First day of my cross-examination.

Q. 470. You undertook to speak with him in reference to this case while under cross-examination; and he told you that he would not permit you to have any conversation whatever with him with reference to your testimony, or any other matter in this case, while you were on the witness-stand under cross-examination. Is this in substance what took place at the time referred to in your answer to X Q. 436?

A. It is.

Defendants' counsel requests the examiner to note that no part of the question or answer to X Q. 436 was read to witness before the last answer; and the examiner so notes.

Q. 471. In view of the frivolous objection by defendants' counsel last above stated, the examiner is requested to read to witness, not only X Q. 436 and the answer thereto, but also X Q. 435 and the answer to that. After which the witness will answer whether he desires in any way or manner to change the answers already given to the matter inquired about.

The examiner is requested to do the reading in so clear and loud tones, that not only the witness, but that defendants' counsel, may hear the same, and so that also Mr. Nehemiah S. Bean, the main witness produced by defendants, and examined, and now in association with defendants' counsel at his immediate left, may hear and understand the same.

X Qs. 435 and 436, and answers thereto, read to witness as requested.

A. I don't know as I want to change those answers any.

Q. 472. In answering X Q. 441, you said, "After

that device was explained to me that was on the 'Reade,' I thought it would obviate that difficulty."

Who explained that device to you, as stated by you in 1142 that answer?

A. James Knibbs.

Q. 473. When and where was that?

Objected to as a matter concerning which the witness has already been asked in leading questions, and the objections to those questions are here repeated.

A. It was in "The Arba Reade" engine-house at Troy, N.Y.

Q. 474. In what year?

Same objection.

1143 A. In 1860.

Q. 475. What part of that year?

Same objection.

A. Early part of the fall.

Q. 476. In your answer to  $\times$  Q. 459, you say, "Said it worked well as far as he had experimented on it." State whether, from your conversation with Mr. Knibbs on that occasion, and from what he said to you, you learned that he was then engaged in experimenting with that invention and device upon the steam fire-  
1144 engine "Arba Reade" at Troy, N.Y.

Objected to as leading.

A. I judged so by the remarks he made.

Q. 477. In your answer to  $\times$  Q. 465, you state, "I think the name of the engine was 'Osgood.' I couldn't really tell the time: you can refer to the book, probably, and find out when the 'Osgood' was built." What book do you refer to in that answer?

A. I refer to the register of the engines built and delivered.

1145 Q. 478. I now show you a book entitled, "Amoskeag Steam Fire-Engines, built by the Amoskeag Manufacturing Company, Manchester, N.H." "Printed by Charles F. Livingston, 1874." Examine that book, and see if that is the book to which you referred, and whether from it you are enabled to state about the time the "Osgood" was built for the city of Troy.

A. It is. I am. It was delivered to Troy, N.Y., in January, 1862.

Q. 479. Then that engine must have been built by  
1146 that company in the latter part of 1861, must it not?

A. I should judge so.

Q. 480. During your last re-cross-examination, de-  
fendants' counsel, by several questions, undertook to  
speculate with you as to what you *thought* about the  
working of a pipe and "plug-cock" on a rotary water-  
pump, while that rotary water-pump was in operation  
under steam-power. You uniformly replied to him on  
that subject, that never having used those devices  
under the circumstances stated in his questions, and  
1147 never having had your attention directed to that sub-  
ject, you were unwilling to state what the effect *would*  
be under such circumstances. Now, had you ever used  
that pipe with the "plug-cock" wide open, with the  
rotary water-pump in motion under steam-power, you  
could at this time definitely and accurately state the  
result produced under those circumstances, could you  
not?

Objected to as leading and incompetent.

A. I think I might.

1148 Q. 481. Do you think that because you did not  
know any thing about the subject inquired of by de-  
fendants' counsel, in the questions to which I refer in  
my last question, that you ought to be censured by  
anybody? or, that the want of that information at the  
particular time that would best suit defendants' coun-  
sel, should, in any way, reflect upon your standing as a  
practical engineer?

Same objection.

A. I don't think there would be any ground for  
1149 censure. I don't think it should.

*Cross-Examination resumed.*

× Q. 482. Describe exactly the relief valve which,  
you say, you saw on "The Arba Reade," — its length,  
diameter, material, position on the engine, and all other  
details.

Objected to as way beyond the well-established rules  
for taking evidence; and especially so in the examina-  
tion of a witness on the stand, who has been cross-

1150 examined in an exhaustive manner, and re-cross-examined exhaustively by defendants' counsel.

A. The length, diameter, and material, I couldn't explain. The position on the pump was from the receiving side to the discharging side.

× Q. 483. What sort of a handle or device for operating did it have? Describe its size, shape, distance from either end of the device, and its materials.

A. I couldn't describe it.

1151 × Q. 484. You don't remember any thing about it, do you?

A. Not as to size.

× Q. 485. Do you remember its shape?

A. I couldn't explain the shape of it. It was many years ago.

× Q. 486. Are you willing to swear that this device did not have a spring in it, so as to work automatically by the pressure of water, and without the engineer opening it?

A. I don't know whether it did, or not.

1152 × Q. 487. Do you know about how many gallons of water a rotary-engine would discharge from the hose at each revolution?

A. I do not.

*Direct Examination resumed.*

Q. 488. In view of the last question by defendants' counsel, I would inquire of you if you know the size of a piece of white chalk?

A. I should want to see the chalk.

1153

SIMON E. FURLONG.

Attest:

CHAS. C. CONANT,  
*Special Examiner.*

## DEPOSITION OF DANIEL W. MORSE.

*Direct Examination by* MARCUS P. NORTON, Esq., *of*  
*Counsel for Complainant.*

BOSTON, July 11, 1879.

1154 Q. 1. Please state your name, age, residence, and occupation.

A. Daniel W. Morse; forty-four; Manchester, N.H.; machinist.

Q. 2. How long have you resided in Manchester, N.H.?

A. About thirty-three years.

Q. 3. You have been a practical machinist for about how many years?

A. About twenty-eight years.

1155 Q. 4. Do you know the Amoskeag Manufacturing Company, at Manchester, N.H.?

A. I know there is such a company.

Q. 5. Have you ever been in the service or employ of that company?

A. I have.

Q. 6. When did you first go into its employ? and how long did you continue so engaged?

A. In 1851, and quit in 1877; about twenty-six years.

1156 Q. 7. Do you mean about twenty-six years of continued employment?

A. At first I worked a year and a half, and then I went to school for a couple of years; after that I was there in continued employment.

Q. 8. What were your duties during the time you were so employed by that company, and in what department was it?

1157 A. Up to 1858 I was employed in the shop on various duties. In 1858 I commenced to work on steam fire-engines, and continued from 1858 to 1877, nineteen years, in that department.

Q. 9. Did you work upon, or have any thing to do with, the first steam fire-engine built by that company at Manchester?



A. Yes, sir.

Q. 10. When was that? and what was the name of that engine?

A. About November 1, 1858; "Amoskeag," No. 1.

Q. 11. Did that engine have a rotary water-pump  
1158 for drawing and discharging water upon fires?

A. Yes, sir.

Q. 12. That kind of steam fire-engine was known as a rotary-engine, was it not?

A. It was.

Q. 13. How many engines of that kind were constructed and sold by that company during the time you were employed there, if you know?

A. Eleven is all I think of now.

Q. 14. Give the names of each of them, and the  
1159 years they were built, if you know, and the places where they were delivered for use?

A. "Amoskeag," No. 1, Manchester, N.H., delivered in 1859; "Machigonne," Portland, Me., delivered October, 1859; "Eagle," Boston, Mass., delivered November, 1859; "East Boston," Boston, Mass., delivered December, 1859; "Quequechan," Fall River, Mass., delivered December, 1859; "Onward," New Bedford, Mass., delivered January, 1860; "Little Giant," Chicago, Ill., delivered February, 1860; "Barnicoat," Boston, Mass., delivered February, 1860; "Saratoga,"  
1160 Boston, Mass., delivered March, 1860; "Relief," Boston, Mass., delivered March, 1860; "Metacomet" 3, Fall River, Mass., delivered in December, 1865.

Q. 15. In what years were these engines built, if you know?

A. Most of them were built in the year they were delivered.

Q. 16. Did any of those engines contain a piston or plunger water-pump for drawing and throwing  
1161 water at fires?

A. No.

Q. 17. You may state, as near as you can, the construction of a rotary water-pump, and the operation of it for drawing and throwing water on fires as applied to those engines.

A. They were a pair of gears inside of a casing, with a portion of one side of the tooth cut away, and rotated from the centre toward the outside periphery of each. The outer periphery of the tooth rotates close  
 1162 to the inside of the outer casing. Each tooth-wheel rotates on an axis of its own. One shaft extends outside of the casing, and has a balance-wheel, with a wrist-pin, which connects with the connection-rod of the steam-cylinder. On the under side of the casing surrounding these cylinders, there is an opening to admit water into the interior or the casing of the pump surrounding the gear cylinders, and on the top side of this casing there is an opening to admit or discharge water. This casing surrounding the pump-gear is de-  
 1163 signed to be air and water tight.

Q. 18. What do you mean by "*gear*," as applied to the pump-cylinders inside the casing spoken of?

A. I mean the two gears turning on the shaft with a portion of one side of the tooth cut away, which rotates from the centre to the inside of the outer casing. The gear that is connected with the balance-wheel, or cylinder, rotates the other gear. The rotation of these creates a vacuum in the pump.

Q. 19. State about the distance in those engines  
 1164 from this rotary-pump to the pressure-chamber in the end of the water-tank, which contained outlets for attaching hose to lead therefrom to a fire.

A. About five feet.

Q. 20. How and by what means was the pressure-chamber connected to the rotary pump?

A. By means of a pipe inside of feed-water tank, about four inches in diameter.

Q. 21. Of what material was that pipe constructed?

A. I think, copper.

1165 Q. 22. How was it attached to the water-pump?

A. I think by a square chamber bolted through the tank to a flange on that water-pipe, there being an opening through the tank into the pipe, so that water could pass from the square chamber through this pipe, about five feet long, into the chamber in front of the engine, or in front of the feed-water tank.

Q. 23. Were there any outlets on this square chamber you have mentioned in your last answer, for the purpose of attaching hose leading from it to fires for the passage of water under pressure? I mean by the  
1166 "square chamber" the one connecting the rotary-pump to the under side of the feed-water tank.

A. No, sir: excepting two.

Q. 24. Were all those rotary-engines constructed with the pressure or discharging chamber in the front end of the feed-water tank?

A. They were not.

Q. 25. How many, and what ones, of those rotary-engines were constructed in that way?

1167 A. Nine of them. "Eagle," "East Boston," "Quequechan," "Onward," "Little Giant," "Barnicoat," "Saratoga," "Relief," and "Metacomet."

Q. 26. How were the other two of those rotary-engines constructed in respect to the matter inquired of in the last two questions?

A. They had a pipe leading from this square chamber on each side of the engine, to which the leading hose was attached.

Q. 27. What engines contained that contrivance?

1168 A. The "Amoskeag" and "Machigonne," the first two built by that company.

Q. 28. How and by what means was water admitted from the hydrant to the pump or chamber surrounding the rotaries which you have described?

A. By attaching suction-hose to the hydrant.

Q. 29. Look at several photographs which I now show you, marked respectively by the examiner, No. 1, No. 2, No. 3, No. 4, No. 5, and No. 6, July 10, 1879, C. C. C., Spec. Ex'r, and state whether those, in your  
1169 opinion, correctly represent the device referred to in your last answer, for the purpose of admitting water from the hydrant to the pump-chamber containing the rotaries.

A. They do.

Q. 30. You will observe in each of those photographs a valve-chamber containing a valve or valves, in some of which they are shown open, and in others

closed. Do you know what that valve or valves were for?

1170 A. Yes, sir.

Q. 31. You may explain that.

A. They were for the purpose of keeping the water from running out of the pump back through the suction into the reservoir, when the engine was stopped and the rotaries ceased to work, and to hold the priming, in case the pump leaked.

Q. 32. You will observe on those photographs at the right, a faucet, or "*plug-cock*," attached to the suction-pipe and opening into it. If you know what that  
1171 is for, you may state.

A. That was for the purpose of opening to let in air to destroy the vacuum in the suction, when the engine was at a draught, and not under hydrant pressure, and so as to pump feed-water into the boiler without working water through the leading hose.

Q. 33. Did the rotary water-pump of those engines, or any of them, have a device or mechanism connecting a pressure or discharging chamber to a suction or supply chamber to return any water under excessive  
1172 pressure in such discharging chamber from that chamber back into such supply or suction chamber for the sole purpose of relieving the discharging hose or discharging chamber from heavy or excessive water-pressure during the operation of the engine at a fire or elsewhere?

A. It did not.

Q. 34. Did those rotary-pump engines, or any of them, contain a device for the purpose of connecting a pressure or discharging chamber with a suction or supply chamber of such rotary water-pump as you have described, by means of an opening, conduit, or water passageway, between such supply and discharging chambers, and having combined therewith a valve so constructed and arranged as to be opened from, or closed upon, a valve-seat therein, whereby to regulate the flow of water between such chambers, as well as to regulate the pressure in the discharging chamber and upon the hose leading to and discharging water upon a fire?  
1173

1174 A. No, sir.

Q. 35. Have you ever seen the rotary-pump engine, "Eagle" No. 3, now at Manchester, N.H., in the shops of S. C. Forsaith & Co., and said to have been built by the Amoskeag Manufacturing Company, and sold and delivered to the city of Boston in November, 1859?

A. Yes.

Q. 36. When did you last see that engine?

A. I have seen it two or three times this last spring.

Q. 37. I again show to you six photograph cards, 1175 marked by the examiner, respectively, Nos. 1, 2, 3, 4, 5 and 6, July 10, 1879, C. C. C., Spec. Ex'r, representing a tube and a valve-chamber therein, and a pipe bolted to the tube near to this valve-chamber. I wish you to look at those, and state if they represent corresponding parts of "Eagle" engine No. 3, so far as you are enabled now to determine from an inspection of those cards. In some of those views you will observe the valves in the valve-chamber closed, and in others as being open.

1176 A. They do.

Q. 38. The pipe that stands in a vertical position, and having a faucet or "*plug-cock*" near the lower end, which is bolted upon the horizontal tube, was put upon rotary-pump engine "Eagle" No. 3, at what time, if you know?

A. Some time in 1859.

Q. 39. For what purpose was that tube, having the "*plug-cock*," or faucet, put upon that engine, if you know?

1177 A. For the purpose of passing hydrant-water around the pump while the pump stood still.

Q. 40. Do you know Nehemiah S. Bean of Manchester, N.H.?

A. I do.

Q. 41. And have known him for about how long?

A. Twenty five or thirty years.

Q. 42. Was he in the employ of the Amoskeag Manufacturing Company while you were there, after January, 1858?

1178 A. Most of the time, except he was away once for a few months.

Q. 43. What were his duties?

A. Superintendent of machine-shop department of the Amoskeag Manufacturing Company.

Q. 44. Did you ever hear Mr. Bean say any thing with reference to this pipe containing a "*plug-cock*" near its lower end, and bolted on the horizontal tube, and shown in the photograph views now before you to which your attention has previously been called in

1179 other questions?

A. I have.

Q. 45. What, if you remember, did you hear him say in reference to that?

A. Heard him say, "We have got to put a pipe on that engine to pass the hydrant-water, till the engine gets up steam." I give the substance.

Q. 46. When and where was that?

A. Some time when that engine was nearly finished, in the machine-shops at Manchester, N.H.

1180 Q. 47. Do you remember whether this pipe and "*plug-cock*," shown by the photographs before you, was the first one made in the Amoskeag shops, and applied to a rotary-pump engine for the purpose of passing a stream of water around the pump, by means of hydrant pressure, while the engine was remaining idle, or making steam ready to start the pump and machinery in motion?

A. According to my best recollection it was; but there was one of different kind of valve.

1181 Q. 48. You may describe the other form made previous to this one as near as you now remember it.

A. The other form of valve was a check valve.

Q. 49. How was that arranged with reference to the pipe?

A. It stood in the pipe perpendicularly, something about five inches in length. It had a valve-seat about half its length with a valve seated thereon, which the pressure of water from the hydrant would lift; and the pressure from the rotary-pump would close it, and stop  
1182 the flow of water either way.

Q. 50. In a pipe with a valve constructed in the way you have described, in how many directions could the water pass in a stream under pressure?

A. One direction.

Q. 51. What direction was that? and by what pressure?

A. From the hydrant, and by the hydrant pressure.

Q. 52. It would be from the hydrant, past the rotary-pump into the hose leading to the fire, would it  
1183 not?

A. Yes.

Q. 53. Was it possible for water to pass back from the hose-pipe, when under pressure, by means of the rotary-pump?

A. Not unless it leaked.

Q. 54. How many such devices were made and put upon any of those rotary-engines?

A. I know of only one.

Q. 55. Why were they not all made in that form  
1184 that were put on those rotary-pumps?

A. One reason was, when the engine was taken to the hydrant and tried, the valve chattered. Another reason was, it was liable to get obstructed by sticks, stones, grass, or such stuff as might be in the water; and, if it was open when the engine went to a reservoir, it would destroy the vacuum in the suction, and the engine wouldn't take water.

Q. 56. State whether this check-valve device was taken from "Eagle" engine No. 3, on which it was  
1185 first placed, and, if it was, when was it done, and by whom, if you know?

A. It was taken off before the engine went out of the yard. I don't know by whom, but by some of the hands in that shop.

Q. 57. What was substituted for it, if any thing?

A. Plug valve, or cock, such as shown in the photograph views.

Q. 58. Upon which side of the engine and of the rotary-pump was this last pipe and "plug-cock" placed  
1186 in position for use?

A. Right-hand side, standing back behind and facing the engine.

Q. 59. Was that upon the same side the engineer stood while operating the engine?

A. No.

Q. 60. He stood upon the side of the pump and engine, directly opposite to that, did he not?

A. Yes.

1187 Q. 61. When it was desirable to open this "plug-cock" valve so as to let a stream of water flow from the hydrant under hydrant pressure, past the rotary-pump and into the hose leading to the fire, by what means was that "plug-cock" valve opened or closed by the engineer for that purpose?

A. The end of the plug was made square so a wrench could be used.

1188 Q. 62. How would the engineer determine when this "plug-cock" was wide open, so as to let water pass the rotary-pump under hydrant pressure from the hydrant to the fire without the aid of the pump, as you have before testified?

A. It is always customary to mark the end of the plug with a deep groove across it. That groove would stand in the same direction as the length of the pipe when open, and crosswise of the pipe when closed.

Q. 63. What was the mean diameter of that pipe, if you remember?

A. I think it was a two-inch pipe.

1189 Q. 64. How many of those rotary-engines contained this pipe and "plug-cock" valve, described by you on this examination?

A. I don't think there were but six.

Q. 65. Give the names of those.

A. "Eagle," "East Boston," "Barnicoat," "Sara toga," "Relief," and "Little Giant."

Q. 66. All those engines were sold and delivered to the city of Boston, were they not?

A. Yes, sir; all but one, — "The Little Giant."

1190 Q. 67. If you know, why did not the other five of those rotary-pump engines have this pipe and "plug-cock" valve, such as was on the six engines you last named?

A. It was only necessary to have this pipe on where they had hydrants or hydrant pressure; and where there were no hydrants or hydrant pressure, it was not necessary.



Q. 68. You may state whether, in your opinion, a rotary-pump steam fire-engine required the use of a pipe, opening, or water-passage, from the pressure side to the supply side of such rotary-pump, having a valve so constructed and arranged as to permit water to flow from the pressure back into the supply part, for the purpose of relieving the pressure upon the discharging hose or any part of the pump while discharging water upon a fire.

A. No, sir.

[*Adjourned.*]

1192

JULY 12, 1879.

Q. 69. Explain, as best you can, why you think that is so.

A. One reason is, the engine can be slowed up so as to relieve the pressure on the pump. Another reason is, from my observations in seeing rotary-steam fire-engines work, the pressure would find relief in the pump itself.

Q. 70. Have you frequently seen rotary water-pump steam fire-engines work under steam?

A. I have seen those built by the Amoskeag Company.

Q. 71. You mean the ones you have testified about on this examination?

A. Yes, sir.

Q. 72. In a steam fire-engine having a rotary water-pump, state what is usually required in order to start one in draughting water, when under motion by steam-power.

1194 . A. It has to be primed with water.

Q. 73. To do that, what means were employed in those engines?

A. There was a pipe — three-fourths inch pipe — leading from the chamber on top of the pump to the feed-water tank. There was a valve in this pipe.

Q. 74. You mean the feed-water tank, in the front end of which was located the pressure or discharging chamber, having outlets for the attaching of hose leading to a fire, do you not?

1195 A. I do.

Q. 75. State whether those rotary water-pump engines had any device for supplying or feeding the boiler with water for generating steam.

A. They had.

Q. 76. State what they were, if you know.

A. They had a pair of feed-pumps on each side.

Q. 77. What kind of pumps were these feed-pumps?

A. Piston.

Q. 78. How, and from what source, were they supplied with water for feeding the boiler?

A. Most of them were piped so as to receive water from the feed-water tank.

Q. 79. These pumps fed water into the boiler when the rotary-pump was in operation, did they not?

A. Yes.

Q. 80. When the rotary-pump was not in operation, and it became necessary to feed the boiler, how was it done?

A. You would have to start the engine, and that  
1197 would start the rotary-pump.

Q. 81. Do you know of any occasion where it would be necessary to feed one of those boilers with water before starting the engine in motion?

A. If the water became low in the boiler, it would be necessary to do it.

Q. 82. On those engines, what was the object in having a separate feed-pump for supplying the boiler? Why not have supplied the boilers with water exclusively from the rotary water-pump?

1198 A. At times the pressure on the main rotary-pump was less than the steam-pressure in the boiler, and it would be necessary to have other pumps for raising the water pressure so as to overcome the steam-pressure in the boiler.

Q. 83. Then it was not absolutely necessary to take water from the rotary-pump to supply the boiler, so long as it could be done from the feed-water tank, about which you have testified?

A. It was not.

1199 Q. 84. The engine could not operate on steam, without operating those feed-pumps, could it?

A. Not unless you disconnected them, and that was not advisable.

Q. 85. About what time did the Amoskeag Manufacturing Company, as a regular business, discontinue the manufacture of rotary water-pump engines, if at all?

A. In March, 1860, as a regular business; but built and sold one in 1865.

Q. 86. Do you know whether any of those engines  
1200 are now in use, or not?

A. I do not.

Q. 87. You say that you have, within the last year, seen at different times the rotary-pump engine "Eagle" No. 3, now at Manchester, N.H. Do you know to what use that engine is being put, if to any use?

A. I don't know of its being put to any use, only being taken to pieces.

Q. 88. Is it in use in the fire-department at Manchester, N.H.?

1201 A. No, sir.

Q. 89. After the Amoskeag Company discontinued the manufacture of rotary-pump engines, did they continue to manufacture other steam fire-engines?

A. They did.

Q. 90. What kind of main water-pump did those engines have?

A. A vertical, double-acting piston or plunger pump: some were single and some double pumps, and all were double-acting.

1202 Q. 91. You may describe, if you can, the substantial construction of these piston or plunger pumps.

A. With the water-cylinder surrounded by a circular chamber, divided vertically outside the water-cylinder, so as to answer both for the suction and discharge chambers of the pump, it had a separate valve-plate at the bottom and top of the pump, carrying both the suction and discharge valves. The suction-valves upon one side of the plate, and the discharge-valves upon the other.

1203 Q. 92. Give the name of the first engine built and delivered by the Amoskeag Manufacturing Company, with a main water-pump of the kind described in your last answer.

A. "Arba Reade," Troy, N.Y.

Q. 93. Give the name of the next one of that kind.

A. "Fire King," Manchester, N.H. It had two pumps instead of one, connected together.

Q. 94. At the time the Amoskeag Manufacturing Company built and sold the two engines, having, for  
1204 their main water-pump, pumps of the kind last described by you, did they contain a device, or mechanism, for returning any excessive water in the force for discharging section or chamber of the pump to the suction or supply chamber, so as to relieve excessive pressure upon the hose leading and discharging water upon a fire, or for relieving excessive pressure in the force-chamber?

A. They did not.

Q. 95. Did either of those engines contain a tube,  
1205 opening, or water passageway, leading from the force or discharging chamber to the suction or supply chamber, and having combined therewith a valve so constructed and arranged as to be opened from or closed upon such opening, conduit, or water passageway, to regulate the flow or passage of water from the pressure-chamber into the supply-chamber while the engine was in operation throwing water upon a fire, with one, two, or more streams of water?

A. It did not.

Q. 96. Did the Amoskeag Manufacturing Company  
1206 ever make any steam fire-engines with a plunger or piston main water-pump, with force or supply chambers surrounding it, as you have described, and containing the invention and the device described in the last two questions, for the purpose of returning water under pressure from the discharging section to the supplying section or chamber in the manner referred to in those questions?

A. They did.

Q. 97. When was the first steam fire-engine of that  
1207 description made and sold by that company, if you know?

A. The first one that I *know* having it in was in April, 1862.

Q. 98. Give the name of that one.

A. "Governor Hill," made for, and sold to, Concord, N.H.

Q. 99. Do you know whether "The Jason C. Osgood" had a main water-pump of the kind you have  
1208 last described, and a device combined and used therewith of the kind and for the purposes described in questions 95 and 96 of this examination, which the examiner will read to you if you desire?

A. I don't know whether she had, or not.

Q. 100. The first steam fire-engine built by that company that you *know* of your own knowledge had a main water-pump and connecting devices for circulating water therein under pressure, of the kind I have asked you about, was "The Governor Hill," was it not?

1209 A. Yes.

Q. 101. How many steam fire-engines, if you know, after and including the making and delivering of "The Arba Reade," did the Amoskeag Company make and sell up to the time of making and delivering "The Governor Hill" to Concord, N.H.?

A. About forty.

Q. 102. And all those had piston or plunger main water-pumps, double-acting, and either single or double plunger-pumps, did they not?

1210 A. Yes.

Q. 103. And the first one that you saw, of which you had knowledge of your own, as containing the device, or invention, described in questions 95 and 96 of this examination, was "The Governor Hill," as you have before stated, was it not?

A. Yes, sir.

Q. 104. "The Jason C. Osgood," that was sent to Troy in January, 1862, was made at or about the same time as "The Governor Hill," by the Amoskeag Company, was it not?  
1211

A. About the same time.

Q. 105. How many engines, substantially of that kind, did they generally have at one time in the process of manufacture at those works? I mean steam fire-engines containing the main water-plunger piston pump

and its attachments. I have no reference to ornamentation, size, or style of finish.

A. Anywhere from one to twenty. I have had as many as twenty on my order-books at one time.

- 1212 Q. 106. After the making and delivering of the "Governor Hill" engine by the Amoskeag Company, in April, 1862, did that company continue to make and sell steam fire-engines with piston or plunger water-pumps of the kind you have described, and containing a device arranged and combined therewith for returning any excessive water in the force or discharging chamber to the suction or supply chamber, for the purpose of relieving the hose discharging water upon a fire, and also the pressure-chamber, from any excessive
- 1213 water-pressure while the engine was in operation throwing water on a fire, and consisting substantially of a conduit, opening, or water passageway, between those two chambers, and having a regulating valve in combination therewith so constructed and arranged as to be opened from or closed upon a valve-seat therein?

A. It did.

- Q. 107. Were most, or all of the steam fire-engines built by that company after May 1, 1862, and down to the time they discontinued making steam fire-engines
- 1214 of all kinds, in 1877, constructed with a main water-pump and its attachments or connections, substantially of the kind in all respects described in the last question and your answer thereto? Excepting of course the rotary-engine built in 1865.

A. All, as far as I know. I have no doubt they all were so. They might have had one or two old pumps without it, that were made before, and sold afterwards.

- Q. 108. Who usually had charge of building the plunging or piston water-pumps at the shops of the
- 1215 Amoskeag Manufacturing Company?

A. Joseph L. Stevens, a portion of the time; William Stevens, of late years.

Q. 109. Who had charge of that special work between January, 1860, and January, 1863?

A. I should say Joseph L. Stevens.

Q. 110. State, if you know, who made or had

charge of the construction of the rotary-pumps used upon the first ten rotary-engines built and sold by that company?

1216 A. I think it was Joseph L. Stevens.

Q. 111. Where is Joseph L. Stevens now, if you know, and what is his business?

A. At Manchester, N.H.; postmaster.

Q. 112. How long has he resided at Manchester, if you know?

A. About twenty years.

[*Adjourned.*]

JULY 15, 1879.

1217 Q. 113. You have stated substantially in this examination that the first two rotary-engines built by the Amoskeag Manufacturing Company had each a discharging chamber immediately on top of the chamber containing the rotaries, and that each chamber had two outlets, containing gates to which was attached hose for delivering water upon a fire. Did either of those engines also have a pipe and "plug-cock" valve, or any other kind of valve, connecting the supply-pipe with that discharge chamber, or any discharging pipe connected with it?

A. Those discharge pipes did not contain gates. The gate was inside of the pressure-chamber, and they contained no pipe and valve leading from the pressure to the receiving or suction pipe.

Q. 114. And those two engines were the only engines of the rotary water-pump make that contained a pressure-chamber, having gates and outlets for attaching pipes to deliver water upon a fire, and referred to in your last answer, were they not?

1219 A. Yes, sir.

Q. 115. And each of the other rotary water-pump engines made by that company had the pressure or discharging chamber in the front end of the water tank, and were connected to the chamber containing the rotaries of the pump by means of a long tube, say from four to seven feet, and about four inches in diameter, as you have before testified, did they not?

A. Yes, sir.

1220 Q. 116. When did you last see the rotary water-pump steam fire-engine "Eagle" No. 3, now at For-saith & Co.'s shops, in Manchester, N.H.?

A. July 14, 1879.

Q. 117. Did you on that occasion make an examination of the rotary water-pump of that engine?

A. I did work on it, and had a good opportunity to examine it, and did examine it.

1221 Q. 118. You say in your last answer you did some work on it yesterday. State what you did, as near as you can, what for, and what you did, if any thing, with that rotary water-pump, after the examination you made, and after the work performed by you.

A. I took off one of the heads of the rotary-pump, and saw the pump loaded on to a team and carried to Quint's photograph room, and saw Mr. Quint make a tintype picture of the rotary-pump with one head off, showing the two rotary-valves for drawing and discharging water.

Q. 119. Have you that tintype picture with you, to which you refer in your last answer?

1222 A. I have.

Q. 120. If you have no objections, I desire you to produce it in evidence, so that I may ask you about it, and so that the Court may see the internal construction and arrangement of a rotary water-pump. Will you do so?

A. I will.

Witness produces the tintype referred to by him ; and the same is put in evidence and marked "Complainant's Exhibit, Tintype No. 1, C. C. C., Spec. Ex'r."

1223 Q. 121. You were present when this tintype was made of the rotary-pump of steam fire-engine "Eagle" No. 3, at Manchester, N.H., were you not?

A. I was.

Q. 122. You saw it made?

A. Yes, sir.

Q. 123. And it was made on yesterday, July 14, 1879?

A. Yes, sir.



Q. 124. Does it correctly represent the interior of  
1224 that rotary-pump, so far as can be done with one side removed?

A. It does. In making the picture, it reverses the position of the rotary-valve. The rotary-valve on the right with long shaft is on the left-hand side in the original pump, and *vice versa* for the other.

Q. 125. What do you mean by rotary-valve as applied to this tintype?

A. I mean the two gear-wheels on the inside of the casing, shown in the picture.

1225 Q. 126. I denominate those as rotaries or cylinders, having, on their outer periphery, projections, or flanges, or cogs, or buckets, so constructed as to mesh or gear into each other in proper form to move together in a circuit, for the purpose of drawing or forcing water. Will this description answer the description of what you call a "rotary-valve"? Of course, I have reference also to the shaft or shafts supporting those, and the casing surrounding them.

A. Yes, sir: it will.

1226 Q. 127. On this tintype picture I observe in the back casing, and toward the top of it, a cavity, or recess, in that casing. If you know, please state what that is for.

A. That cavity extends in depth to the centre line of the pump. It receives the water in the space shown in the picture as just closed, as the rotaries rotate.

Q. 128. What space have you reference to in your last answer? and where is it?

A. I mean the dark spaces between the gears, as  
1227 shown in the picture.

Q. 129. On this tintype I observe an open space at the bottom: what is that for, if you know?

A. That is the inlet, and shows the place where the suction-pipe is bolted to the outer casing of the pump.

Q. 130. At the top of the pump shown by this tintype, I also observe an opening: what is that for, if you know?

A. The discharge opening. It shows the flanges for bolting on the pipe or square chamber, which is  
1228 bolted to the under side of the feed-water tank.

Q. 131. Upon the right-hand side I observe a shaft projecting out somewhat beyond the lower part of the pump, and extending into one of the rotating cylinders, upon the outer periphery of which is seen the flanges, or buckets, which I have before referred to: what is that shaft for, if you know?

A. That is the driving-shaft of the pump.

Q. 132. To this shaft, which you say is the driving-shaft, there is attached a balance-wheel with a wrist in  
1229 it, forming a crank, to which is attached a pitman, or valve-rod, leading to the steam cylinder, for operating the pump by steam-power, is there not?

A. Yes, sir.

Q. 133. Give the names of a few persons whom you remember as having worked on those steam fire rotary-pump engines in the manufacture at the shops of the Amoskeag Manufacturing Company.

A. I myself. Simon Furlong worked on some, but had charge of taking out and delivering the engines.  
1230 James S. Batchelder and Joseph L. Stevens. I think Horace Nichols worked on them also, and W. H. Writner, or H. W., I don't know which, and others, whose names I don't remember.

Q. 134. Give the names of a few persons whom you remember as having worked on piston or plunger pump steam fire-engines after the 1st of January, 1860, and until the 1st of January, 1865, a period of four or five years.

A. I worked on them, Batchelder, Writner, Fur-  
1231 long, Stevens, and Charley French, I think. James F. Pherson was a painter; Bill Goodwin was the boss painter; and Dudley Gilman also worked there.

Q. 135. Who did the work on the check valve and pipe, which you have described as being the pipe that connected the supply-pipe with the discharge-pipe of rotary steam fire-engine "Eagle" No. 3, now at Forsaith & Co.'s at Manchester, N.H.?

A. I did some of it, and I think Horace Nichols did some of it. I presume D. B. Varney, or some of  
1232 his hands, made the copper pipe.

Q. 136. Will you make, or have made, a drawing

showing this pipe and the check-valve which you have described, and furnish the same as a part of your answer to the last and other questions on the same subject? I desire this in order to show the Court the manner in which the water passed around the check valve in that pipe. I do not care to have you give any particular location. I simply want a vertical section, showing the valve inside the pipe, the valve-seat, and  
 1233 the globe-like or bulging pipe surrounding it to allow water to pass around the pipe when the valve is open.

A. I will at some future time.

Q. 137. If you desire to say any thing more with reference to the construction or operation of that "*check valve*," you may do so.

A. My impression is now, that that valve was nipped to the saddle, that is, bolted to the suction-pipe, and in substantially the same place as the plug-cock shown on the photographs Nos. 2 and 4.

1234 [Adjourned.]

BOSTON, August 9, 1879.

Q. 138. What steam fire-engines, if any, have you ever attended or operated by steam-power? You may give the names of them, if any, and also the time and place, as near as you remember.

A. "Fire King" No. 2, Manchester, N.H., I had charge of for about fourteen years, and operated it at fires, or on other occasions, whenever it was used. I  
 1235 have been running recently an engine owned by the Amoskeag Manufacturing Company at Manchester.

Q. 139. What kind of main water-pump did the "Fire King" engine have while under your charge, as stated in your last answer?

A. Had a double-acting, double pump.

Q. 140. A piston-plunger, or rotary-pump?

A. Piston-pump.

Q. 141. Did you ever operate a steam fire-engine having a rotary main water-pump, for any purpose?

1236 A. I don't know that I have. I possibly might for a few moments perhaps, or minutes.

Q. 142. Who built "The Fire King," if you know?

A. Amoskeag Manufacturing Company.

Q. 143. Is that engine still at Manchester, N.H?

A. Yes, sir: it is.

Q. 144. When did you see it last?

A. Some time during this week.

Q. 145. Has the main water-pump of that engine at this time, so far as you know, a device connecting  
1237 the force or pressure chamber with the suction or supply chamber (with the piston or plunger chamber between those) so as to return water under excessive pressure in the discharging chamber back and into the supply chamber by means of an opening, conduit, or water passageway, located between those two chambers, and having a regulating valve in combination therewith, and so constructed and arranged as to be opened from, or closed upon, a valve-seat in such opening, conduit, or water passageway?

1238 A. It has, as I understand that question.

Q. 146. When, if you know, was that invention or device put upon that engine?

A. I should say some time in 1862 or 1863.

Q. 147. By whom was it placed there, if you know?

A. By Mr. Batchelder, I think.

Q. 148. Give Mr. Batchelder's first name, if you please, if you know it.

A. James S.

1239 Q. 149. Is he living, or dead, so far as you know?

A. I presume he is living: he was at last accounts I heard from him.

Q. 150. When and where did you last see him, if you remember?

A. I saw him at Manchester, some four weeks ago.

Q. 151. If you know, please state in whose employ he was at the time he put the invention and device, which I have stated to you in a previous question, upon "Fire King" engine, as stated by you in answer to a  
1240 question?

A. Amoskeag Manufacturing Company.

Q. 152. That engine, so far as you know, is now owned by the city of Manchester, is it not?

A. It is.

Q. 153. I now request your attention particularly to steam fire-engines having piston or plunger main water-pumps located between and surrounded by two chambers, namely, suction or supply chamber, force or discharging chamber, each being separated from the  
 1241 other by means of a vertical partition on each side of the piston chamber, and having receiving and discharging valves at either end thereof; and, with your mind upon a pump substantially of this description, I ask you to state whether the suction or supply part has, in close connection therewith, a separate chamber, generally known as a vacuum-chamber.

Yes, sir: there are.

Q. 154. With a main water-pump of substantially the same description stated in the last question fixed in  
 1242 your mind, I ask you to state, whether, in connection with the force or discharging chamber and closely allied thereto, there is a chamber known as an air-chamber?

A. There is.

Q. 155. So far as you have had knowledge of a rotary water-pump for steam fire-engines, state whether you ever saw or knew of a vacuum-chamber or air-chamber of the description and location stated in your last previous answers being used?

1243 A. Never saw a vacuum-chamber on one. I have seen them with air-chambers on.

Q. 156. Where was that air-chamber located?

A. My recollections are, on the top side of the pump.

Q. 157. How many such have you seen?

A. Several. I don't know how many.

Q. 158. Well, where?

A. Where? What?

Q. 159. Where was it you saw them?

1244 A. I have seen them in Manchester, I have seen them in Lowell, I have seen them in Boston, and other places.

Q. 160. Can you name any of them? If so, name them.

A. I don't know as I can now.

Q. 161. Did you ever see a steam fire-engine having a main rotary water-pump with an air or pressure chamber located in the front end of the tank, carrying water to supply the boiler or to prime the rotary-  
1245 pump?

A. Never saw one with an air-chamber. I have seen them with a pressure-chamber.

Q. 162. Where did you see those?

A. I have seen them at Manchester, and several other places.

Q. 163. And those that you saw with the pressure-chamber in the front end of this water-tank, contained outlets from the pressure-chamber, to which hose were attached for delivering water upon a fire, did they not?

1246 A. Yes, sir.

Q. 164. And those outlets contained a gate to open and close therein, did they not?

A. Yes, sir.

Q. 165. You have said to me that you have made a mistake as to a date, in your testimony previously given. If I understand you correctly about that, you may correct it now, if you desire to.

A. I don't have any recollection about saying any thing about a date.

1247 Q. 166. Whatever you *did* say about your desire to make a correction, whether I understood you correctly or not, if there *be* any matter about which you desire to make any correction in this examination, you may do so now.

A. In answer No. 20, I think, I would like to add two words—the words “in diameter”—at the end of the 20th answer.

Q. 167. I show you six photographic views, cabinet size, marked and filed as “Complainant's Exhibits,  
1248 7, 8, 9, 10, 11, and 12.” Take and examine them, if you please, and state, if you know, what is represented by them, and, if you do, what parts.

A. Rotary-pump and part of its connections.

Q. 168. On two of those, namely, 10 and 11, I observe in the background a diamond-shaped recess. If you know, you may state what those represent.

A. They are to receive the water that is discharged out of those gear-wheels when they get in a certain position there.

1249 Q. 169. Those recesses represent the same recesses in the outer casing of the rotary gear or valves of the pump, which you testified about some days ago when you were under examination in this cause, do they not?

A. They do.

Q. 170. I want to ask you another question with reference to the separate air-chamber which you state you have seen applied to a rotary main water-pump. Did you then have reference to the rotary-engines  
1250 built by the Amoskeag Company, or to those built by somebody else? and, if so, by whom, if you remember?

A. I did not have reference to those built by the Amoskeag Company, but to some built by Silsbee, I think it is.

Q. 171. Did you ever see any of the rotary water-pump engines built by the Amoskeag Company that had the separate air-chamber inquired about?

A. No, I have not.

1251 Q. 172. When the Amoskeag Company commenced building engines with piston or plunger main water-pumps, such as I have stated in a previous question to you to-day, state whether, if you know, those main water-pumps contained a separate vacuum-chamber, and also a separate air-chamber, substantially of the kind I have already inquired of you concerning, in construction and arrangement.

A. The very first ones they built might have not had a vacuum for a short time, but vacuums were  
1252 adopted and put on to the pumps of the first engines a short time after they were tried and found to need it. They contained separate vacuum and air chambers.

*Cross-examination by C. WYLLYS BETTS, Esq., of Counsel for Defendants.*

× Q. 173. After the water passed into the diamond-shaped recess, shown on the photograph view

No. 10, into which side of the pump did it pass, the discharge or the suction side?

1253 Objected to on the ground as tending to mislead, because the evidence shows there is no such thing as a discharging or suction chamber to a rotary-pump, the stream of water being in a current, and continuous from the time it leaves the hydrant until discharged at the nozzle.

Defendants' counsel objects to the foregoing instruction to the witness.

A. Passed into the discharge side: it was already in the discharge or pressure side when it was in that  
1254 cavity.

× Q. 174. That cavity, then, did not extend so far down as to allow the water to pass through by gravity from the discharge side of the pump into the suction side?

A. No, sir: it did not.

× Q. 175. In what year did you first operate "The Fire King"?

A. I assisted in operating it in 1860.

× Q. 176. While employed by the Amoskeag Company, were you consulted in regard to the purposes of various parts of engines which were given you to work upon?  
1255

A. Well, I wasn't employed for that purpose, — of consulting counsel.

× Q. 177. Your ideas, then, of the purposes of the various parts of steam fire-engines, when you saw them for the first time applied, were not derived from the officers of that company?

A. Well, the officers of that company, Mr. Bean —  
1256 I consider him an officer of that company — and I have had a good deal of talk with him, a good many times when they had been perfecting and trying various devices on engines. I think a good many ideas I derived were had from officers of that company.

× Q. 178. Did they consult you in regard to what was needed on steam fire-engines?

A. Well, as I said before, I wasn't hired and paid as consulting agent in the matter; nevertheless, I have



1257 had a good many talks with Mr. Bean, as regards improvements and construction. He showed me several times what he was doing, and going to do.

× Q. 179. Name the piston or plunger engines constructed before the steamer "Governor Hill," which you are willing to swear positively did not have upon them, when they left the Amoskeag works, a relief valve such as you have testified was upon that engine connecting the discharge and suction chambers together.

A. Allow me to look at that record or register?

× Q. 180. I will.

1258 Witness looks at pamphlet list of Amoskeag steam fire-engines.

A. I know "Tiger" 3, delivered June, 1862, didn't have it on; "The E. W. Harrington," delivered June, 1860, didn't have it on, on the original pump; also "The Fire King," delivered in April, 1860. That's all I am able to name from positive knowledge.

× Q. 181. What makes you sure that these three engines didn't have a relief valve when delivered?

1259 A. Well, I know "The Fire King" had what was called a flood-valve on, in July, 1860, and a considerable time afterwards; for after July, 1860, Batchelder and myself made, and had made, a nozzle, and screwed on to the gate, and we used to let excessive water-pressure off into the street. "The E. W. Harrington" I know didn't have it on, because I have seen it. They froze their pump up, and split it or cracked it, and an iron band was shrunk on to it. Some time afterwards it was taken over to the shop,—some considerable time after,—and a new pump was put on to it. "Tiger,"  
1260 of Lawrence, I know it wasn't on that one, because I made some fittings,—piping round the outside from the pressure to the receiving side; and after those were put on, at the time she was there in the shop, or at the time of the repairs, these pipes that were first put on they had taken off, and larger ones put in their places, as they claimed they wanted to run their engine faster, when the gates were closed, to feed their boiler. I have a distinct recollection of seeing them try it in the yard. They were not satisfied with it after they were

1261 enlarged. That's all the reasons I think of at present.

× Q. 182. When was this original piping put on "The Tiger"?

A. I don't know as I can tell you the time; some time after "The Essex" was built and delivered to Lawrence, another engine of the same style and class, generally speaking.

× Q. 183. Then your knowledge, from which you are willing to swear that these three engines did not have relief valves when originally delivered, is derived  
1262 from events which took place subsequent to their delivery?

A. No, sir: not wholly.

× Q. 184. How so? What else do you remember?

A. It was derived from what I saw.

× Q. 185. What was that?

A. Saw the engines.

× Q. 186. Did you not see also the other engines about which you are not willing to swear whether they had relief valves, or not?

1263 A. Yes, sir: I did see them; and I have no doubt there was lots of them didn't have it on, in my own mind.

× Q. 187. Do you remember to have examined the three engines about which you are willing to swear, any more particularly before they left the shop, than you examined those about which you will not swear?

A. I didn't make particular examination of any of them. I was engaged in work on helping construct all the engines built there, from the time they commenced  
1264 on the first one, till the time they sold out. I have already given you the circumstances about those three that I know it was on.

× Q. 188. Name the rotary-engines which you are willing to swear positively did not have on them when they were delivered, a pipe and plug-cock such as is described in the 38th question, as being on engine "Eagle" No. 3, when delivered.

A. "Amoskeag," of Manchester; "Machigonne," of Portland, and others, I think. I can't name the  
1265 others positively.

× Q. 189. You say, in answer to the 68th question, that a rotary-engine did not require any opening, or water passageway, for relief. How do you know that?

A. That is not all, is it?

× Q. 190. It was *more* than you said: all you said was, "No, sir." The question to which you made that answer was, "You may state whether, in your opinion, a rotary-pump steam fire-engine required the use of a pipe, opening, or water-passage, from the pressure side  
1266 to the supply side of such rotary-pump, having a valve so constructed and arranged as to permit water to flow from the pressure back into the supply part, for the purpose of relieving the pressure upon the discharging hose, or any part of the pump, while discharging water upon a fire." How do you know that it required no such passageway?

A. I gave that as my opinion from my observation in seeing those rotary-pumps work.

× Q. 191. In answer to question 69, you gave as  
1267 a reason for that opinion, that "the pressure would find relief in the pump itself." State how that would take place.

A. If my recollection serves me, you haven't given the whole reason yet that I gave.

× Q. 192. I have given the whole of one reason. Your words were, "Another reason is, from my observations in seeing rotary-engines work, the pressure would find relief in the pump itself." State how that would occur.

1268 A. That is not all the reasons I gave, if my recollection serves me right, and I think it does.

× Q. 193. What were the observations named in that reason? State what engines you saw working where the pressure was finding "relief in the pump itself," and where this occurred.

A. I have seen all the rotary-engines the Amoskeag Company built. Does that answer the question? I should say now, I have seen them all working; and, as I couldn't see into the interior of the pump itself, I  
1269 couldn't see the workings as you intimate I ought to see. The relief I allude to is leakage, in that particu-

lar respect, which is more or less; and it would be more under a heavy pressure than it would be under a light one.

× Q. 194. When and where did you see the rotary-engine "East Boston," built by the Amoskeag Company, working, when the water-gates were closed, and the engine was attached to a hydrant, and the vacuum-cock closed?

1270 A. I don't know as I ever saw it working under all those conditions.

× Q. 195. When and where did you see the other rotary-pump engines, which had the pipe and cock al-luded to, working under those conditions?

A. I don't know as I ever saw any of them.

× Q. 196. Are not those conditions necessary in order that the pressure in those engines could find relief in the pump itself by leakage? If not, state any other conditions by which that could occur.

1271 A. There wouldn't be sufficient leakage to allow an engine to run.

× Q. 197. Then, under what conditions does this leakage occur to such an extent that the pressure in the engine will, through it, find relief?

A. I never intended to say the engine would find full relief by leakage, or any other way. I don't think I made any such statements.

× Q. 198. Can you name a single occasion on which your observations of the working of rotary-  
1272 engines led you to the opinion that the pressure in the pump of such engines or upon the discharging hose would "find relief in the pump itself"?

A. No, sir: I cannot.

× Q. 199. Under the conditions named in the 194th cross-question, would not the pump find immediate relief if the plug-cock in the pipe connecting the discharge with the suction, or the pressure with the supply parts of the pump, should be opened?

A. I shall have to give you an *opinion* in that  
1273 matter.

× Q. 200. That's what I want.

A. My opinion is, the water would work around the pump, and would be worked over and over.

× Q. 201. Do you know why the engine "Eagle" No. 3 is no longer used? She is entirely worn out, is she not?

A. I presume parts of her are worn out.

× Q. 202. When the rotary-pumps of the Amoskeag engines were new, they were entirely, or almost  
1274 entirely, water-tight, were they not?

A. I presume they were as near tight as they could get them. I have no doubt they were.

× Q. 203. Do you know why the pipe and plug-cock on these rotary-engines were placed on the right-hand side of the rotary pump, instead of on the left-hand side?

A. I don't know as I do.

× Q. 204. Do you know that the only purpose for which this pipe and plug-cock was put on those rotary-  
1275 engines, was to pass the water around the pump before the engines began to work?

A. I know that was what Mr. Bean said he put it on for.

× Q. 205. Did he say there was no other purpose for which he put it on?

A. I don't think he did. I don't recollect he did.

*Direct Examination resumed.*

Q. 206. In your answer to × Q. 204 you say, "I  
1276 know that was what Mr. Bean said he put it on for." State whether you wish the Court to understand from that answer, that at the time Mr. Bean first put on the rotary-engine the contrivance stated by defendants' counsel in × Q. 204, that you heard Mr. Bean say with reference to it, in words or in substance, that he put that device on to that rotary water-pump for the purpose of passing water under hydrant pressure from the suction side to the discharging pipe or side, so that a current of water might flow from the hydrant through  
1277 this pipe and cock and hose upon a fire, while the steam was being made ready to start the engine so as to drive under steam-power the rotary-valves or rotaries of the main pump?

Objected to as leading and immaterial.

A. That is substantially what he said.

Q. 207. Did you ever hear Mr. Bean say, prior to the first day of January, 1864, that he intended that pipe and cock for any *other* use or purpose than I have stated in my last question to you?

1278    Objected to as immaterial and leading.

A. Don't recollect I ever did.

Q. 208. Give your best present recollection about that, if you please.

Same objections.

A. I never heard Mr. Bean, or any one else, pretend it was any thing but a pipe for passing hydrant water, up to that time.

Q. 209. Passing hydrant water under hydrant pressure: is that it?

1279    Same objections.

A. Yes, sir.

Q. 210. To what engine was this first applied at the time when you heard Mr. Nehemiah S. Bean, now present, state substantially what you have testified to?

Same objections.

A. "Eagle" 3 of Boston.

Q. 211. Is that "Eagle" 3 the same engine that you say you recently saw at the machine-shop or in the buildings of S. C. Forsaith & Co. at Manchester, N.H.?

1280    A. I presume it is; I don't know from my own knowledge: said to be, any way.

Q. 212. Counsel for defendants, during your cross-examination, several times asked you for an opinion of the matters stated in his questions. State whether those opinions, as you gave them to him in answer to those questions, were your best judgment founded on your knowledge of and experience with rotary water-pumps for steam fire-engines.

A. Yes, sir. I gave my opinions founded on my  
1281 best judgment.

*Cross-Examination resumed.*

× Q. 213. Look at the photograph marked "No. 1, July 10, 1879," and state how many of the rotary-engines manufactured by the Amoskeag Company had,

upon the suction-pipe, a cock such as shown in that photograph.

A. I think all of them went to Boston: I am not positive. I know I made several of them at that time  
1282 they were putting them into the suction-pipe.

× Q. 214. What was that cock called?

A. I think it was called an air-cock.

× Q. 215. When the hose was attached to one end of the suction-pipe marked "S" in that photograph, and the other end was closed, and the air-cock closed, was not the closed end of that suction-pipe a vacuum-chamber in all cases where the suction of the rotary-pump was drawing water out of that suction-pipe faster than the water was flowing in from the hydrant?

1283 A. Under those conditions there was undoubtedly a vacuum in that pipe.

× Q. 216. Did not the engine "Eagle" No. 3 have an air-chamber at the end of her water-tank into which the discharge-pipe opened, and to which the leading hose was attached?

A. I shouldn't regard that as an air-chamber.

DANIEL W. MORSE.

Attest:

CHAS. C. CONANT,

1284 *Special Examiner.*

## DEPOSITION OF HORACE NICHOLS.

*Direct Examination by* MARCUS P. NORTON, Esq., *of*  
*Counsel for Complainant.*

1285

BOSTON, July 16, 1879.

Q. 1. Please state your name, age, residence, and occupation.

A. Horace Nichols; fifty; Manchester, N.H.; machinist.

Q. 2. How long have you resided at Manchester?

A. About twenty years.

Q. 3. Do you know a company in Manchester, N.H., known as the Amoskeag Manufacturing Company?

A. I do.

1286 Q. 4. You have known that company for about how long?

A. Twenty years.

Q. 5. Have you ever been in its employ?

A. I have.

Q. 6. When for the first time? and about how long a time did you continue there?

A. In 1859, in August, I think; about eighteen years.

1287 Q. 7. When, if you know, did that company first commence the manufacture of steam fire-engines?

A. In 1859.

Q. 8. What kind of steam fire-engines did it build during that year? I now inquire as to the main water-pump.

A. Rotary-pumps.

Q. 9. Look at "Complainant's Exhibit, Tintype No. 1," and state whether that correctly represents the inside part of the rotary water-pumps, built by that company in 1859.

1288 A. I should say that was a correct copy.

Q. 10. Do you know how many steam fire-engines having rotary water-pumps were built by that company previous to the first day of January, 1863?

A. Ten.

Q. 11. Did you do any work on any of those rotary-engines, or upon the water-pump in any part?

A. I worked on parts of all of them.

1289 Q. 12. Do you remember when that company first began to put upon the rotary water-pumps of those engines, a tube with a "plug-cock" valve in it near its lower end, extending outside of the pump from the supply-pipe to a discharge-pipe on the opposite side the pump, substantially as shown upon photograph views now shown you, marked respectively "Nos. 1, 2, 3, 4, 5, and 6, July 10, 1879, C. C. C., Spec. Ex'r"?

A. In 1859.

Q. 13. Do you remember whether that contrivance was put upon all those rotary-pump engines, or not?



A. It was not put on to all of them.

1290 Q. 14. If you remember, give the name of the first engine on which that was put at the shops of that company in Manchester.

A. "Eagle" 3 of Boston.

Q. 15. If you know, you may state why, or for what purpose, that contrivance was put upon that engine.

A. Put on to pass the water by the pump when there was not steam enough to start the engine and the pump.

1291 Q. 16. In your last answer, do you mean the main rotary-pump?

A. Yes, sir.

Q. 17. You say that device was put there upon that engine for the purpose of passing water by the rotary-pump. Please state how, or by what force, the water would pass by the rotary pump by means of that device, without the aid of steam-power.

A. Pass through the suction, by the pump, by hydrant pressure.

1292 Q. 18. Did you ever know or hear of that contrivance being used for any other purpose than that which you have stated on this examination?

A. No.

Q. 19. I have called your attention to a "plug-cock" valve in the lower end of the pipe, which, you say, was constructed and used for the purpose of passing water by the rotary-pump from the suction-pipe to a discharging pipe on the opposite side of the pump. State, if you remember, whether there was any other device or valve used in that pipe instead of the plug-cock valve.

1293 A. The first we put in was a check valve in place of the plug-cock.

Q. 20. State, if you please, whether you worked upon that which you call a "check valve," to be used for the purposes you have stated.

A. I did.

Q. 21. And for the Amoskeag Manufacturing Company, at Manchester, N.H., in the year 1859?

A. Yes, sir.

1294 Q. 22. Give the name of the steam fire-engine for which this "check-valve" arrangement was first constructed.

A. "Eagle" 3, Boston.

Q. 23. Was a pipe containing that check valve first put upon that engine in the shops of that company at Manchester for the purposes you have stated?

A. It was.

Q. 24. If you know, you may state who gave the directions for putting that pipe and check valve on that engine, in the manner and for the purposes you have stated.

A. It was the foreman of the job, H. W. Writner.

Q. 25. Now, if you please, you may give the construction of that "check valve," as near as you can remember it.

A. It was a round valve, about four or five inches long, with a puppet valve inside, so constructed as, when open, to allow the water to pass through it.

Q. 26. The water, in passing through this "puppet valve" would pass through the surrounding valve-seat, would it not, when the valve was opened from that seat?

A. It would.

Q. 27. And when there was no current or hydrant pressure of water against the under side of it to open it, the valve part of its own weight would close tightly on the valve-seat, would it not?

A. It would.

Q. 28. Do you know why that kind of valve was not used instead of the "plug-cock" arrangement?

A. It rattled and danced up and down, and made a noise.

Q. 29. Was there any danger of it not closing tight on the valve-seat by reason of any obstruction in the water?

A. Yes: if dirt or sticks got in it, the engine wouldn't draught.

Q. 30. How long after that contrivance was put on "Eagle" 3 before it was taken off and a "plug-cock" put on in place of it?

A. Just as soon as we could get it back in the shop and get it off, after trying it.

Q. 31. Why was the "plug-cock" used instead of the "check valve" you have described, if you know?

A. Because if you want to draught with the check valve, if you get dirt under it, you could get no water; and the plug-cock, if you shut it tight, the engine wouldn't leak and wouldn't draught.

Q. 32. Do you know Nehemiah S. Bean of Manchester, N.H.?

A. I do.

Q. 33. You have known him about how long?

A. About twenty years.

Q. 34. Was he in the employ of the Amoskeag Manufacturing Company while you were there in its employ?

A. He was.

Q. 35. Was he there at the time of building these rotary-engines of which you have spoken?

1300 A. Yes.

Q. 36. What were his general duties in the shops of that company, if you know?

A. Superintendent of the shop.

Q. 37. Was he superintendent of the manufacture of steam fire-engines at the shops of that company?

A. He was.

Q. 38. Did he have any thing to do with the building of this device of which you have spoken, for passing the water by the rotary-pump?

1301 A. I suppose he ordered it; had it made.

Q. 39. And for the purposes you have testified about?

A. Yes.

Q. 40. Were you ever present at the city of Lowell, Mass., with Nehemiah S. Bean, when he operated or experimented with rotary-pump steam fire-engine, "Eagle" No. 3?

A. I was.

Q. 41. Do you remember what year that was? and, 1302 if you do, state it.

A. November, 1859. Mr. Bean and I were on the

way together to deliver that engine to the city of Boston.

Q. 42. Did you take any part in the operation of that engine at Lowell on that occasion?

A. I was a kind of general helper.

Q. 43. Do you remember that engine being operated on a bridge spanning the Concord River in that city?

1303 A. I do.

Q. 44. Do you know also of its being worked on that occasion on one of the commons in that city?

A. I think we did work on the Common too.

Q. 45. Do you remember what occurred and affected its operation while it was at work on that bridge, and being operated under steam-power?

A. The plug-cock leaked so that it affected the draught of the pump, and Mr. Bean took a hammer, drove the plug-cock in, screwed a nut on the end of it,  
1304 and made it tight, and then she draughted water.

Q. 46. You saw him drive in the plug-cock with a hammer, did you not?

A. Yes, sir.

Q. 47. About how many blows did he strike the "plug-cock" with that hammer, if you remember?

A. Two or three probably.

Q. 48. Did they appear to be solid, firm blows, so far as you could ascertain?

A. Good, fair blows, I should judge.

1305 Q. 49. So as to make the "plug-cock" firm in its socket? Is that it?

A. Yes.

Q. 50. The "plug-cock" valve is in the form of a tapering spindle, fitted into a funnel-shaped receptacle for it, is it not?

A. It is.

Q. 51. Through this tapering spindle part there is an opening for passage of the water, is there not?

A. There is.

1306 Q. 52. On the smaller end of this tapering spindle part there was a nut and screw, was there not?

A. Yes.

Q. 53. Was the "plug-cock" valve on that engine, when at Lowell, Mass., on exhibition, of the kind in construction that you have just given with reference to the construction of the "plug-cock" valve?

A. It was.

Q. 54. With what instrument did Mr. Bean turn that nut on the "plug-cock" valve?

1307 A. Monkey-wrench, I think.

Q. 55. You saw him turn that nut with that wrench, did you not?

A. Think I did.

Q. 56. Did he appear to press the nut hard?

A. He screwed it pretty tight.

Q. 57. Upon which side of that engine, as you stood at the furnace or boiler end, facing it, was that contrivance located, which you say was constructed for passing water by the rotary-pump so as to give a stream of water from the hydrant, without working the rotaries of the pump by steam-power?

1308

A. On the right hand, as you stood looking at the fire-door.

Q. 58. And on which side would Bean, or any one else, stand to control the throttle-valve and to view the water-gauge and the steam-pressure gauge?

A. Left-hand side.

Q. 59. On which side of that engine were the try-cocks of the steam-boiler located?

1309 A. Left-hand side.

Q. 60. Which side of that engine was the handle of the steam-whistle of that engine?

A. Left-hand.

Q. 61. Which side of that engine was the cock used to prime the rotary-pump, and also the cock to open the way to supply the water for the boiler to generate steam?

A. Left-hand side.

Q. 62. How many streams of water was this engine, 1310 "Eagle" No. 3, constructed to throw at one time on a fire?

A. Four outlets for four hose leading to a fire.

Q. 63. Whereabouts was the chamber located which had the four outlets referred to in your last answer?

A. Front end of water-tank.

Q. 64. About how far was that from the main rotary water-pump?

A. About four feet; as much as that, sure.

Q. 65. How many streams of water were thrown  
1311 by that engine when it was located on that bridge, spanning the Concord River at Lowell, Mass.?

A. One, I think.

Q. 66. And only one?

A. I think that was all.

Q. 67. Have you any present doubt about it?

A. No, I have no reason to doubt it.

Q. 68. Did you ever know from Bean, or from any other source, whether the "plug-cock" on that engine that was so forcibly driven in by Bean and his hammer,  
1312 and so firmly screwed down by Bean and his wrench, was ever released from the firm position in which Bean placed it on that occasion?

A. To my knowledge it never was.

Q. 69. About how high was that bridge above the river, if you know?

A. As I remember, about twenty feet.

Q. 70. From what water-source did that engine on that occasion draught water?

A. From the river below the bridge.

Q. 71. When that engine was being operated on one of the commons in the city of Lowell, from what water-source did it draught its water?  
1313

A. From the pond near by, I think.

Q. 72. Did that rotary-pump engine, or any of these rotary-pump engines, have a separate vacuum-chamber and also a separate air-chamber connected with it?

A. I should say not.

Q. 73. You came to Boston with that engine with  
1314 Mr. Bean, did you not?

A. I did.

Q. 74. To whom was it delivered in Boston, if you know?

A. To Mr. George W. Bird, chief engineer of the Boston Fire-Department.

Q. 75. While you and Bean were in Boston on that occasion, did you work that engine in draughting and throwing water?

A. I think we worked it from a hydrant.

1315 Q. 76. And in the same condition it was when on the bridge at Lowell?

A. Yes.

Q. 77. Do you know where this engine, "Eagle" No. 3, now is?

A. She is in a shed in Mr. Forsaith's yard, at Manchester, N.H.

Q. 78. Do you mean Messrs. S. C. Forsaith & Co.?

A. Yes, sir.

Q. 79. Have you ever operated, under steam, a  
1316 rotary water-pump engine, such as was made by the Amoskeag Manufacturing Company, at the time you have stated?

A. Yes, sir.

Q. 80. Give the name of that engine, and where and for about how long a time you so operated it.

A. "Amoskeag" No. 1; at Manchester, N.H.; some sixteen years.

Q. 81. Did you ever discover any trouble with that engine during the time you operated it, with reference  
1317 to there being too much water-pressure on the hose?

A. Never had any trouble, as I know of. If we got too much pressure we slacked up.

Q. 82. Slacked up what?

A. The speed of the engine, ran slower.

Q. 83. Did that engine contain a device of the kind you have described, for passing water by the rotary-pump from the supply to the discharging tube, at the time you first began to operate it?

A. She did not.

1318 Q. 84. Did that engine at any time after that have a contrivance of that kind placed upon it?

A. It did.

Q. 85. About when?

A. About 1874, and after the city water-works were put in.

Q. 86. For what purpose was it then put upon that engine, if you know?

A. To get water on to the fire before we had steam to start the engine with.

1319 Q. 87. You mean, then, do you not, that it was for the purpose, and the purpose only, to pass a stream of water by the rotary-pump from the hydrant-pipe to the discharging-pipe by water-pressure from the hydrant or water-works?

A. I do.

Q. 88. Did you ever use that contrivance for any other purpose than that stated in the last question and the answer thereto?

A. Never.

1320 Q. 89. Do you know how that device came to be put upon that engine at the time stated by you? and at whose request it was done, if by anybody's?

A. Done by my own request to the chief engineer, A. H. Lowell.

Q. 90. And you requested it to be done for the purposes stated in your answer to Qs. 86 and 87, of this examination, did you not? — which the examiner will read to you for your information.

Qs. 86 and 87, and answers thereto, read to witness,  
1321 as requested.

A. I did.

Q. 91. Were you in the employ of the Amoskeag Manufacturing Company when they first began to make piston or plunger water-pump engines?

A. Yes.

Q. 92. Are you familiar with the construction and operation of piston or plunger water-pump engines?

A. Yes, sir.

Q. 93. Do the main water-pumps of those engines  
1322 have a separate vacuum-chamber connected with it?

A. Yes.

Q. 94. Do the main water-pumps of those engines have a separate air-chamber connected with it?

A. They do.

Q. 95. On which side of this water-pump is the air-chamber of which you have spoken?

A. Stands about in the centre, but is connected with the discharging side.



Q. 96. On which side of this piston or plunger  
1323 pump is the vacuum-chamber?

A. On the suction or receiving side.

Q. 97. State whether all the steam fire-engines containing piston or plunger main water-pumps, built by the Amoskeag Manufacturing Company, contain the air and vacuum chambers of which you have spoken.

A. They do.

Q. 98. State whether the steam fire-engines built by the Amoskeag Manufacturing Company, having a piston or plunger main water-pump, contained a device  
1324 of any description for connecting the discharging chamber to which the discharging hose are attached, with the supply-chamber to which is attached the hose leading to the hydrant, by means of a conduit, opening, or water passageway, having a regulating valve combined therewith, and so constructed and arranged as to be opened from, and closed upon, a valve-seat therein, to regulate the passage of water from the force back to the supply chamber, and also to relieve the excessive pressure upon the discharging-hose or discharging-chamber. I mean the first engines built and sold  
1325 by that company, and during the years 1860 and 1861.

A. I know they didn't put them on the first ones. When they commenced putting them on, I don't know. It is a long time ago since they commenced putting them on those engines.

Q. 99. From your knowledge of and experience with a steam fire-engine having a main rotary water-pump, have you ever seen or known of a necessity or an occasion requiring the use of the device or invention  
1326 described in the last question, while such engine was being operated by steam-power for drawing and throwing water?

A. No.

Q. 100. Who else, if anybody, besides yourself, accompanied Mr. Bean in the delivery of the engine that was shown in Lowell, as you have stated (I mean engine "Eagle" No. 3), on its delivery to Boston at the time you have stated it was handed over to George W. Bird, chief engineer of the Boston Fire-Department?

1327 A. There were two of us. I don't remember whether it was Writner, or some one else.

Q. 101. Did Mr. Bean ever caution you, or, to your knowledge, caution the other person with you, who delivered that engine to the city of Boston, "to be very careful not to injure the valve or cock which" Mr. Bean "had driven in with a hammer, and screwed up the nut upon the opposite end from which I had used the hammer"?

A. I don't remember of his ever cautioning me.

1328 Q. 102. What are your present best recollections about it?

A. I think he did not.

[*Adjourned.*]

*Cross-examination by C. WYLLYS BETTS, Esq., of Counsel for Defendants.*

× Q. 103. How do you know what were the reasons in the minds of the superintendent or manager of the Amoskeag Company for taking off the check valve  
1329 which you have mentioned on "Eagle" No. 3, and substituting the "plug-cock" shown in the photographs?

A. I don't know their minds, but we were ordered to take it off. It came from the foreman of the job; because it made so much noise rattling.

× Q. 104. So far as your own knowledge goes, then, of the reasons and purposes of the company, this check valve may have been taken off, among other reasons, because it would not allow the water to flow both ways, may it not?

1330 Objected to by counsel for complainant as to what *may* have been done, but no objection to what *was* done, within knowledge of the witness.

A. It was taken off because it was noisy and didn't work satisfactory, — was why it was taken off.

× Q. 105. How do you know that was the sole purpose or reason for taking it off?

A. I heard them say so in the shop, — that it was noisy, and wasn't good for any thing.

× Q. 106. Did you hear them say that because it  
1331 was noisy it was taken off, and for no other reason?

A. I did.

× Q. 107. Name the rotary-pump steam fire-engines made by the Amoskeag Manufacturing Company which you are willing to swear positively did not have upon them, when delivered, the pipe and plug-cock similar to that which is marked in red on Complainant's Exhibit, Photographic view No. 7.

1332 A. "Machigonne," of Portland; "Amoskeag," of Manchester, N.H.; "Onward," of New Bedford. I am pretty positive "The Progress," of New Bedford, but am not quite so positive as regards that one.

× Q. 108. On which side of the rotary-pump on the engine "Amoskeag No. 1," is the pipe and plug-cock which you have testified were put on in the year 1874?

A. On the right-hand side, standing behind, facing the fire-door.

× Q. 109. Is that plug-cock operated by a wrench similar to the one shown in the photograph?

1333 A. Yes, sir.

× Q. 110. If the handle of that wrench should be turned toward the left-hand side of the engine, when the cock was closed, could not the engineer, standing on the left-hand side of the engine, in his usual position when operating, easily reach under the water-tank and open it?

A. No, sir: he could not.

× Q. 111. Why not?

A. Too far off, — couldn't reach it.

1334 × Q. 112. How do you know that after the engine "Eagle" No. 3 was delivered to the city of Boston, the plug-cock was "never released from the firm position in which Bean placed it on that occasion," as stated in the 68th question?

A. I don't know whether it was, or not. It never was to my knowledge.

*Direct Examination resumed.*

1335 Q. 113. You say the "check valve" was taken off at the Amoskeag shops because it did not work satisfactorily, and because it made a great deal of noise in

its operation. In what respect, if you know, was it that "check valve" didn't work satisfactorily?

A. It was taken off because it made so much noise. It was a music-box.

Q. 114. Was there any liability, so far as you know, of sticks or other impediments getting between that valve and its seat below?

A. There was.

1336 Q. 115. And that was another trouble which impeded the usefulness of it, was it not?

A. I should consider it so, if I had an engine with one in.

Q. 116. Did you ever hear N. S. Bean, or any one else around those shops, say, in substance, that a valve or "plug-cock" must be put into that pipe so as to let the water pass both ways?

Objected to as immaterial.

A. I don't remember of hearing them say so.

1337 Q. 117. Your understanding, then, of that device was, it was merely to pass a stream of water under hydrant pressure by and beyond the rotary-pump to the discharging hose, and from there on a fire: is that it?

Same objection.

A. That is my understanding of it, and all I ever used it for in my experience.

Q. 118. You spoke, on your cross-examination, of an engine named "Progress" as having been sent to New Bedford, Mass., by that company, and also "The Onward," that went to the same place. What was the main water-pump of engine "Onward"?

A. Rotary-pump.

Q. 119. What was that of the engine "Progress"?

A. That was a rotary-pump, I think.

Q. 120. Are you sure of that?

A. Pretty sure. I am not positive about "The Progress;" I am "The Onward."

Q. 121. Were both those engines sent there during 1339 the same year?

A. I think they were.

Q. 122. What was the main water-pump of the engine sent to Fall River, Mass., the same year?

A. Rotary-pump, I think.

Q. 123. Do you remember the name of that engine?

A. "Quequechan."

Q. 124. Do you remember about how much difference in time between the engine shipped to Fall River, and the first one shipped to New Bedford?

1340 A. Couldn't tell you, — no idea of it.

*Cross-Examination resumed.*

× Q. 125. "The Amoskeag" No. 1 was built and delivered to Manchester, N.H., was it not, at a time before a pipe and plug-cock had ever been applied by the Amoskeag Company to any engine as it was applied to engine "Eagle" No. 3?

A. It was.

× Q. 126. And "The Machigonne," in like manner, delivered to Portland, Me., was it not?

1341 A. It was.

× Q. 127. Are the reasons for abandoning the check valve above referred to, matters within your own personal, positive knowledge, or do you only know what you heard said at the time?

A. From my own personal knowledge.

× Q. 128. How did you acquire that knowledge?

A. Being around there and seeing it operate.

× Q. 129. Did the Amoskeag Company, or its officers who had charge of the building of steam fire-engines, consult you in regard to the reasons for abandoning that check valve?

1342 A. No, sir.

*Direct Examination resumed.*

Q. 130. On your re-cross-examination, defendants' counsel has asked you about "The Amoskeag" and "Machigonne" rotary water-pump engines, the first ones built by that company; and you say the pipe and this "plug-cock" were not on those engines at the time they were delivered to Manchester and to Portland. Were there any water-works or hydrant pressures in Manchester at that time, or at Portland either?

1343 A. None in Manchester, except in the mill-yards: Portland, I don't know about that.

Q. 131. When were hydrants and pressures first put in the city of Manchester, N.H.?

A. I can't give you the dates. I think in 1872 or 1873.

1344 Q. 132. And after they were put in, the rotary water-pump engine then owned by Manchester had this pipe and "plug-cock" applied to it, substantially the same as that on "Eagle," did it not?

A. It did.

*Cross-Examination resumed.*

× Q. 133. When were the water-works and hydrant pressure first introduced into the city of New Bedford?

1345 A. I don't know.

HORACE NICHOLS.

Attest:

CHAS. C. CONANT,  
*Special Examiner.*

## DEPOSITION OF ALBION H. LOWELL.

1346 *Direct Examination by* MARCUS P. NORTON, Esq., *of*  
*Counsel for Complainant.*

BOSTON, July 16, 1879.

Q. 1. Please state your name, age, residence, and occupation.

A. Albion H. Lowell; forty; Manchester, N.H.; iron-founder.

Q. 2. How long have you resided in Manchester?

A. Thirty-four years last March.

1347 Q. 3. Do you know a company at Manchester, N.H., known as the Amoskeag Manufacturing Company?

A. Yes, sir.

Q. 4. You have known that company for about how long?

A. Since 1845.

Q. 5. Have you ever been in its employ? and, if so, about how long?

A. Yes; about twelve years. I commenced to work  
1348 there about 1856.

Q. 6. Do you know Nehemiah S. Bean of Manchester, N.H.?

A. I do.

Q. 7. You have known him for about how long?

A. Since 1859. I have known him ever since he came to Manchester to take charge of the Amoskeag Company's shop. I was in their employ at that time.

Q. 8. Did you know him during each year, from 1859, until you severed your connection with that com-  
1349 pany as one of their employees?

A. I do, with the exception of a year or two when he was at Lawrence; and I also knew him a long time after I left, as an employee of that company.

Q. 9. In what department of the business of that company were you employed there, as a general thing, while you were there?

A. I worked in the mills for a time. I worked in the repair-shop a short time. I worked in the office a short time. I worked setting up locomotives for a time,  
1350 and as clerk at the foundry for a time, and as overseer of their foundry, in the spring of 1858, up to the last of 1867 or first of 1868.

Q. 10. Do you remember, and, if you do, state the time, when that company first began to build steam fire-engines having a main rotary water-pump, for sale in the market, or according to orders received for their construction?

A. My recollection is, that it was about 1859. I remember the first engine perfectly well. She was not  
1351 built on an order, so far as I remember, but was afterwards bought by the city of Manchester.

Q. 11. Do you remember the name of that engine? and, if you do, state it.

A. "Amoskeag."

Q. 12. Of what material was the rotary water-pump made?

A. Brass.

Q. 13. Of what material was the suction-pipe constructed?

1352 A. Cast-iron, of this one engine.

Q. 14. Of what material was the discharging pipe constructed?

A. I couldn't say positively. My impression is, it was brass.

Q. 15. The suction-pipe and the discharging pipe were cast in separate pieces or parts, and then bolted to the main water-pump, were they not?

A. They were to the rotary-engines.

Q. 16. Do you remember about the time when that  
1353 company commenced to manufacture at Manchester, N.H., steam fire-engines containing piston or plunger main water-pumps? and, if you do, state the time.

A. I can't state the exact time, but I remember the circumstance very well; but I could tell by referring to their catalogue. I know the engine very well that they made first.

Q. 17. Give the name of that engine, as you now remember it.

A. "Fire King;" the city's number of it is 2. 1  
1354 don't recollect the builder's number.

Q. 18. State whether the steam fire-engine "Arba Reade," that went to the city of Troy, was in process of construction by that company at the time they built the steam fire-engine "Fire King."

A. Couldn't say. They used to have a great many under way at the same time. I remember perfectly well the time she was built, as she was something new.

Q. 19. I now hand you a catalogue relating to  
1355 steam fire-engines built by the Amoskeag Manufacturing Company, and issued by that company in 1874. I wish you would examine the list of engines of rotary and other kinds, built, sold, and delivered by that company, and see if you can ascertain from that any thing that will enable you to fix the time when that company first began to build fire-engines having a piston or plunger main water-pump?

A. Yes, sir, I can.

Q. 20. You may state the time as you find it there.



A. April, 1860.

1356 Q. 21. State whether this piston or plunger pump was cast separate and alone, or whether it had one or more chambers upon the side of it surrounding it.

A. The pump cylinders were enclosed in another case which left a space around them, and in that space there were partitions cast which separated the suction from the discharge, and the whole thing was held together by what we call the suction-pipe: it was a suction on one side, and discharge on the other, of this pipe.

1357 Q. 22. One of the chambers which you have spoken of in your last answer was a pressure or discharging chamber, having outlets to attach hose to, leading from that chamber to the fire, was it not?

A. It had outlets we used to put a brass gate on to, and then screw a hose on that.

Q. 23. How many such outlets were usually constructed?

A. Of that class of engines we are talking of now, there were four.

1358 Q. 24. Upon the other side of this piston or plunger chamber and on the opposite side of this pressure or discharging chamber, referred to in my last question, there was a suction or supply chamber, was there not, to which the suction-hose was attributed?

A. There was.

Q. 25. Was there not also a chamber on top, and also on the bottom, of this main water-pump, made up of a supply, plunger, and discharging chamber? and did not these head or end chambers communicate with the pressure and discharging chamber at either end, by means of a series of supplying and discharging valves, so that, when the piston operated, the pump would be double-acting in drawing and discharging water?

A. There was a chamber on the top and bottom formed by the heads when they were screwed on. There was a series of valves on a brass plate that acted so as to make it a double-acting pump. This plate on valve-seat was on either end of the pump.

Q. 26. In a single plunger pump, with a double-

1360 acting piston, how many chambers were there, and what were they, to make up the whole pump?

A. I should say there would be a chamber at each end, a pump or piston chamber, and there must be a suction and discharge chamber.

Q. 27. Were not the supply and discharging chambers separated from each other by a partition cast with the cylinder, forming the piston or plunger chamber, and also with a cylinder surrounding the outside, by which the outside part of the suction and discharging  
1361 chambers were formed, so as to divide or form those two chambers surrounding the piston-chamber?

A. There was a partition cast between the two castings or cylinders for forming the suction and discharge, all cast in one piece.

Q. 28. Then, if I understand you correctly, three chambers were formed by this one casting, namely, the piston or plunger chamber, the suction or supply chamber, and the force or discharging chamber, leaving openings at each end, of course, to receive the valve-  
1362 plates of which you have spoken. Is that it?

A. Yes, sir.

Q. 29. How were those chambers formed in making up the mould in the sand for the casting?

A. They were made by setting into the mould what we call a "dry sand core." That core had openings or holes through it for the iron to run through, to make the partition across the space between the outside casing and the casing of the pump cylinder.

Q. 30. Were the rotary water-pumps constructed  
1363 in the manner you have described the construction of this piston or plunger pump?

A. They were not.

Q. 31. Was there any similarity whatever between the construction of the two kinds of pumps?

A. No, sir.

Q. 32. You had the charge of the casting of the piston or plunger pumps, and of all castings connected with that kind of engine, and also of all the castings used in the construction of the rotary-pump engine,  
1364 did you not?

A. I had the charge of making all the iron castings used in the construction of all classes of steam fire-engines built by the Amoskeag Manufacturing Company during my connection with them.

Q. 33. Were there any brass castings used about those engines that you didn't have charge of? and, if so, who did?

A. There were. Those castings were bought outside the yard. Most of them, if not all, were bought  
1365 of either Darling & Varney or D. B. Varney of Manchester.

Q. 34. Do you remember, and, if you do, state whether there were any changes or alterations made in the patterns by or from which the main water-pump and its several chambers were formed of cast-iron in the manner you have testified?

A. I don't remember of any change being made in the pump in the manner of forming the two chambers; but I do remember of what we called a "seat" being  
1366 formed on one of the partitions, what was called a "relief-valve seat," that was what they told me it was for.

Q. 35. State whether, on the outside of the outer cylinder, there was any projection or part so formed in the casting as to permit a stem to pass through that outer casing, with a valve on its inner end to cover the opening, or valve-seat, which you say was formed in one of the partitions.

A. I think the outside casing had a spot on it to  
1367 level the outside casing in which to screw a brass neck and stuffing-box, which this valve-stem would pass through; and, to have the stem pass through, there was a hole drilled in the cast-iron to screw this neck into, and the valve-stem operates through the neck.

Q. 36. Was there a female screw formed in this brass neck of which you have spoken, to receive a corresponding male screw formed upon the valve-stem?

A. I should say there must have been.

Q. 37. How was this valve-stem operated so as to  
1368 open or close the valve upon the valve-seat of the opening through one of these partitions, as you have testified?

A. By a balance-wheel on the outer end of the stem, so as to move it by hand.

Q. 38. This opening that you speak of as being in the partition was for the purposes of forming a conduit, or water passageway, between those two chambers, was it not?

A. I so understand it.

1369 Q. 39. You say you was told this contrivance was a "relief valve." Who told you that, if you remember?

A. Mr. Tozer.

Q. 40. Who was Mr. Tozer? In whose employ was he? and what were his duties in that employment?

A. He had charge of the Amoskeag Manufacturing Company's pattern-making department, and was in their employ.

Q. 41. Where is Mr. Tozer at this time, if you know?

1370 A. He is dead.

Q. 42. And he was the person who made these alterations in these patterns?

A. He had charge of the department in which they were made.

Q. 43. Did he show you the patterns after these alterations were made, and explain to you why and for what purpose they were made?

A. He came to my office before the alteration was made, and consulted with me in regard to how it could  
1371 be made. After the alteration *was* made, the pattern was sent to the foundry for one or more castings, which I had made.

Q. 44. After these alterations were made, did you continue to use those patterns for casting main water-pumps, or did you make iron patterns from those to do your castings from?

A. I don't know that the pattern for that kind of pump was ever changed from that time to the present. The alterations might have been made of iron.

1372 Q. 45. State, as near as you now remember, the time when those patterns were altered, and castings made from them in the manner you have testified.

A. I don't remember the time when the alterations

were made. The engine "Arba Reade" was made from that set of patterns before they were altered. When the alteration was made, I understood it was for another engine to go to the same place where "The Arba Reade" went.

Q. 46. Did you know, at the time "The Arba  
1373 Reade" was being built, to what city she was to be sent for use? If you do, state the same.

A. I knew at the time; and I think it was Troy, N.Y.

Q. 47. About how long was it after "The Arba Reade" was built that these alterations were made?

A. It was in the vicinity of two years.

Q. 48. Do you know about how expensive the alterations of the wood patterns were, so as to apply what you have called the "relief valve"?

1374 A. If I should be asked to do it at the present time, I should do it for three dollars.

Q. 49. Do you know Mr. Horace Nichols, and Dan W. Morse, of Manchester, N.H., and Simon E. Furlong, now of Woburn, Mass.? and, if you do, about how long have you known them?

A. I know them; have known them at least fifteen years.

Q. 50. Were they in the employ of the Amoskeag Manufacturing Company at the time you were em-  
1375 ployed there?

A. Most of the time. Two of them all of the time.

Q. 51. Were you ever chief engineer of the fire-department of the city of Manchester, N.H.?

A. I was.

Q. 52. When first, and for how long did you continue?

A. I was chief engineer in 1875, 1877, and 1878.

Q. 53. While you were chief engineer of that department, did Horace Nichols apply to you to have  
1376 some alterations made in rotary steam fire-engine "Amoskeag," of which you have testified to-day?

A. He did.

Q. 54. What alterations did he want made on that engine, if you remember?

A. He wanted a pipe put on to connect the suction-pipe with the discharge chamber of that engine.

Q. 55. Did he tell you for what purpose he wanted that change made? and, if he did, what was it?

A. I don't remember that he told me what for, but  
1377 I *knew*: perhaps he did tell me.

Q. 56. What was it for?

A. To take water from the hydrant past the rotary-pump, when we hadn't steam enough to work the engine.

Q. 57. At that time did the city of Manchester have what is known as water-works, or hydrants, for supplying water to various parts of the city?

A. They did.

Q. 57, *a*. In what year, if you know, were those  
1378 water-works and various hydrants constructed?

A. Don't remember; but my impression would be 1874 or 1875.

Q. 58. How many years before the construction of those water-works was this "Amoskeag" engine used in the city of Manchester, if you know?

A. I don't remember, but I should think from fourteen to fifteen years.

Q. 59. Do you know what the average pressure of the water-works at Manchester is?

1379 A. I do not; but should think about sixty pounds to the square inch, and some places more. I know of one place where it is ninety.

Q. 60. Do you know whether the changes which you caused to be made, at request of Mr. Nichols, upon the rotary-pump "Amoskeag," were ever used for any other purpose than to pass water by the rotary-pump to be delivered on a fire by hydrant pressure, when the rotaries and engine were remaining still?

A. I do not.

1380 Q. 61. You had them put on that engine for that purpose, and that purpose only, did you not?

A. For that purpose, and none other.

Q. 62. How many piston or plunger pump engines have the city of Manchester now in use in its fire-department?

A. Two in active service, and two retired for reserve engines.

1381 Q. 63. Have each of those engines upon their main water-pump this device which you have described as "relief valve," when you were speaking about the alterations made in the patterns?

A. Three, — "Fire King," "N. S. Bean," and "The Amoskeag."

Q. 64. Who built those engines?

A. Amoskeag Manufacturing Company.

Q. 65. Was this so-called "relief valve" put upon each of those engines at the time they were built? If not, when was it done?

1382 A. It was put on two of them at the time they were built; the third one, on "The Fire King," was put on some time afterwards, but I don't know when.

Q. 66. When was the so-called "relief valve" put on the "N. S. Bean" engine?

A. Put on either in 1877 or 1878, I don't remember which.

Q. 67. By whom was that so-called "relief valve" put on that engine, and what kind of a valve was it in its action?

1383 A. Put on by the Manchester Locomotive Works, at my request, and automatic in its action.

Q. 68. Is there also a "relief valve" on that engine that is operated by hand, that was put on when it was built?

A. I think there is. Those two valves are alike, except that one is operated by hand, and the other automatically.

[Adjourned.]

1384 *Cross-examination by C. WYLLYS BETTS, Esq., of  
Counsel for Defendants.*

BOSTON, April 14, 1879.

× Q. 69. Before "The J. C. Osgood" was made from the patterns of "The Arba Reade," what other engines were made from those patterns?

A. "The Arba Reade" was made from them.

× Q. 70. And no other?

A. I don't say so.

× Q. 71. You don't know?

1385 A. I don't know.

× Q. 72. After "The J. C. Osgood" was made, what engines were made from those patterns?

A. Well, my business was such that I couldn't tell. I received an order to make a certain number of engines from certain patterns. It wasn't often I knew who they were for. There was no record that told who they were for, — that is, at my office, I mean. My orders were for engines of certain numbers from patterns of certain numbers. When I delivered the casting at the shop, I knew nothing more about them; wasn't supposed to.

× Q. 73. How do you know that "The J. C. Osgood" was made from those patterns of "The Arba Reade"?

A. I didn't know that the name of the engine was "J. C. Osgood," until I was shown the catalogue of the Amoskeag Company. Previous to the engine being built, the man that had charge of making the patterns for the Amoskeag Company came to my office  
1387 and consulted with me in regard to some alterations to be made in the pattern, as to how they would accomplish a certain object. He told me they were going to build an engine: I think it was for the city of Troy, N.Y., from the pattern "The Arba Reade" was made from.

× Q. 74. And that is all you know about it, is it?

A. I know what the alteration was he wanted me to make. He told me what they intended to accomplish by the alteration.

1388 × Q. 75. How do you remember how long after "The Arba Reade" was built this alteration took place?

A. I remember by reference to the catalogue only.

× Q. 76. Then your memory does not guide you in respect to the length of time?

A. No, sir.

× Q. 77. Of what material was the pump of the



engine "Phoenix" cast, which was sent to Hartford in November, 1861?

1389 A. I don't know.

× Q. 78. So far as you know, you had nothing to do with it, had you?

A. If the engine was built by the Amoskeag Manufacturing Company, in the year 1861, I had charge of making the gray iron castings.

× Q. 79. Was not the pump of that engine, "Phoenix," made of brass?

1390 A. The Amoskeag Manufacturing Company made some engines with brass pumps, and I had charge of making the dry sand moulds for brass pumps. The moulds were sent to a brass-foundry owned either by Darling & Varney or D. B. Varney of Manchester, N.H. I had no occasion to know any thing of the mould or casting after the mould left our shop. The moulds that were made in green sand for brass pumps were made at Darling & Varney's or D. B. Varney's.

× Q. 80. Do you know whether the pump of that engine "Phoenix," when delivered to the city of Hartford, had in it an opening, or water passageway, between  
1391 the suction and discharge sides of the pump?

A. I do not.

*Direct Examination resumed.*

Q. 81. In your answer to × Int. 74, you say, "I know what the alteration was he wanted me to make. He told me what they intended to accomplish by the alteration." You may state what those alterations were, and what you were told was expected to be accomplished by those alterations of that main water-pump.

1392 Objected to as hearsay evidence, and incompetent.

A. The alteration which I made was, to cast a valve-seat on to the partition of the pump, which was intended to relieve the discharge side of the pump when the valve was open, by letting the water pass from the discharge side back into the suction side.

Q. 82. You also prepared a pattern of metal or wood to go upon the outer surface of the cylinder-casing, surrounding both the pressure and supply cham-

bers, so that a bushing, or some other device, might be  
 1393 inserted therein for the screw-stem to pass through,  
 upon one end of which was the valve to open or close  
 the opening, or water passageway, which you had made  
 in that partition; while at the other or opposite end of  
 this screw-stem was attached a wheel for operating the  
 stem and valve attached to it. Did you, or did you  
 not?

A. I did not alter the pattern, but I *did* make  
 several castings from the patterns after they were so  
 altered.

1394 Q. 83. These alterations in these patterns were  
 done by the regular pattern-maker, were they not?

A. They were done under his direction, or by him.

Q. 84. Whenever alterations were contemplated in  
 patterns, was it usual for the pattern-maker, or some  
 one under him, to confer with you, so as to ascertain  
 how to do the same, and at the same time to remove  
 the pattern from the mould without injury, so as to  
 form a perfect casting?

A. Not in all cases. But in some, where it was in  
 1395 any wise complicated, they quite often consulted with  
 me, in order to accomplish certain points.

Q. 85. In this particular case now under considera-  
 tion, you were consulted with regard to the alterations,  
 . were you not, to some extent?

A. I was consulted in regard to the alteration of  
 this. It wasn't wholly an alteration in the pattern;  
 part of it was in the core-boxes.

Q. 86. Previous to this consultation and the mak-  
 ing of these alterations, had you ever seen, heard of,  
 1396 or known about, any patterns, wood or metal, being in  
 or about the shops of that manufacturing company of  
 the kind you have described, after the alterations were  
 made, by which or for which the results or purposes  
 which you have described as the reasons why these  
 patterns were altered in the manner you have stated?

A. I have not.

*Cross-Examination resumed.*

1397 X Q. 87. At what time of the year was it that you made this alteration of "The Arba Reade" patterns?

A. I don't remember.

A. H. LOWELL.

. Attest:

CHAS. C. CONANT,  
*Special Examiner.*

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BOSTON, July 31, 1879.

1398 Convened pursuant to notice served on defendants' counsel for the taking of this rebuttal evidence. (See Notice, &c., and service of same, hereto annexed.)

Marcus P. Norton, counsel for complainant, present; counsel for defendant not being present, on motion of counsel for complainant examination postponed to August 6, 1879, at 10.30 A.M.

## NOTICE, ETC., AND SERVICE OF SAME.

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In the Circuit Court of the United States,  
IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.  
IN EQUITY.

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CHRISTOPHER C. CAMPBELL,  
*Complainant, and Assignee in Trust,*  
*versus*

THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK,  
*Defendants.*

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TO BETTS, ATTERBURY, & BETTS, *No. 20 Nassau Street, New York, of Counsel for defendants; and to the MAYOR, ALDERMEN, and COMMONALTY OF THE CITY OF NEW YORK, Defendants.*

1399 GENTLEMEN, — You, and each of you, will here please take due notice, and notice is now and hereby given you, that, in pursuance of a stipulation in this cause dated New York, July 9, 1879, and of an order of this Court made thereon and in accordance therewith, and dated New York, July 18, 1879, I shall commence to examine witnesses and to take proofs and documentary evidence in this cause, before Hon. John G. Stetson, a special examiner herein, duly appointed by this Court, at his office in the United States Court  
1400 House building, in the city of Boston, Mass., on Thursday, July 31, 1879, at ten o'clock in the forenoon of that day.

You will please take further notice that witnesses will be examined and proofs and documentary evidence taken by and before said John G. Stetson, at the time and place stated aforesaid, in rebuttal of the evidence

and proofs taken and offered by you on the part, and in behalf of, the defendants, herein, at the city of Manchester, N.H., and at the city of Boston, Mass.;  
 1401 and that such evidence and proofs so taken by me in this cause before said Stetson will be duly filed in court in this cause, and read in evidence at the final hearing of the same, on the part of the complainant.

You are requested to be present at the time and place aforesaid, to examine such proofs as shall then and there be offered by me; and to cross-examine such witnesses as shall be produced and examined in chief by me at that time and place.

You will also please take further notice, that such  
 1402 examination of witnesses and proceedings before Mr. Stetson will be continued, from time to time, until completed.

Of each and every hereof you will please take due and timely notice.

Yours respectfully,

MARCUS P. NORTON,  
*Of Counsel for Complainant, Troy, N.Y.*

1403 LOCKWOOD & POST,  
*Solicitors for Complainant,*  
 No. 140 Nassau Street, New York City

Dated this twenty-eighth day of July, A.D. 1879.

Boston, July 28, 1879.

Upon the application of complainant, I designate and appoint the office of the Clerk of the Circuit Court of the United States in Boston, Mass. (140 Tremont Street), and Thursday, the thirty-first day of July,  
 1404 1879, at ten o'clock, A.M., as the place and time for taking evidence for complainant in the cause named in the foregoing notice.

JOHN G. STETSON,  
*Special Examiner.*

*City and County of New York, ss.*

David J. Post, being duly sworn, says, that on the twenty-ninth day of July, 1877, he served a copy of the

within notice, &c., on a member of the firm of Betts,  
 1405 Atterbury, & Betts, defendants' attorneys, by handing  
 the same to, and leaving it with, one of said firm.

DAVID J. POST.

Sworn to before me, July 29, 1879.

W. S. LEWIS, *Notary Public*,  
 Kings County.

*Cert. filed, N. Y. Co.*

AUGUST 6, 1879.

1406 Met pursuant to adjournment. Counsel for com-  
 plainant and counsel for defendants both being pres-  
 ent.

*Adjourned to August 7, 1879, at ten A.M.*

AUGUST 7, 1879.

Met pursuant to adjournment.

Present — Counsel for both parties.

Counsel for defendants says that he will not object  
 1407 to certain testimony taken, without notice to him,  
 on the 10th, 11th, 12th, 15th, and 16th of July last, on  
 the ground that regular notice was not given, on con-  
 dition that counsel for complainant will now agree to  
 withdraw his objections to the testimony taken in his  
 absence at Manchester, N.H., on the thirteenth day of  
 March, 1879.

Counsel for complainant consents and agrees to the  
 above stipulation, and consents that any objections,  
 other than that of want of due notice, may be entered  
 1408 at the end of each deposition, so far as now taken, with  
 the same effect as if taken and entered during the  
 progress of the examination of the witnesses respec-  
 tively; and stipulates that the witnesses will be pro-  
 duced for cross-examination.

Complainant's counsel offers in evidence six photo-  
 graphic views, marked respectively as follows: Com-  
 plainant's Exhibits, photographic views, Nos. 7, 8, 9,  
 10, 11, and 12, August 7, 1879, C. C. C., Special Ex-  
 aminer.

## DEPOSITION OF CLARK W. DOTEN.

*Direct Examination by* MARCUS P. NORTON, Esq.,  
*of Counsel for Complainant.*

1409 Q. 1. What is your name? and have you testified before in this case on behalf of defendants? and, if so, when?

A. Clark W. Doten. I have testified before; it was some time last spring.

Q. 2. You may state whether at any time you have had charge of, and operated, a fire-engine under steam-power, having a main water rotary-pump?

A. I have.

1410 Q. 3. When and where was that? Give the time when you first commenced, and about how long you continued to do as stated in your last answer.

A. In East Boston. I commenced the twenty-sixth day of December, 1859, and continued until the first day of May, 1863.

Q. 4. Give the name of the rotary water-pump engine of which you had charge during that time at East Boston, Mass.?

A. "East Boston" No. 9, when I took it; afterwards the name was changed to that of "Maverick"  
 1411 No. 9.

Q. 5. You were engineer in charge of that engine, were you not, during that time?

A. I was.

1412 Q. 6. At the times and places where you operated that engine under steam-power, did the city of Boston or East Boston, as the case may be, have what is generally known as water-works, with conduits or water mains and hydrants extending into different parts of those places for the supply of water for public use and purposes?

A. It had.

Q. 7. Did those hydrants, to which I have referred in my last question, contain a water-pressure, received by means of water in the reservoir of supply?

A. It did.

Q. 8. If you know, you may state or approximate the amount of that pressure to the square inch.

A. It varied from forty to fifty pounds. I have seen it at all the different pressures between those two  
1413 points.

Q. 9. If you know, you may state whether, during a fire in Boston or East Boston, while you had charge of the engine you have named, you operated parts of the engine for throwing water upon a fire while the engine itself was not in motion by steam or other power.

A. I played water through the leading hose without starting the engine.

Q. 10. If I understand you correctly, you say that  
1414 you have thrown water upon a fire through the hose or delivery pipes of that engine when attached to a hydrant without starting the steam-cylinder or the rotary water-pump. Am I correct in this understanding of your last answer?

A. That is correct.

Q. 11. You threw water through the leading hose of that engine upon a fire, without the aid of the rotary water-pump or of steam-power. Is that it?

A. That's correct.

Q. 12. And that, too, while that engine was connected to the hydrant by means of what device?  
1415

A. By means of a pipe connected from the suction-pipe to the hydrant, known as a suction-hose.

Q. 13. How, and by what means, did you do that without operating the engine itself?

A. By a connection from the suction-pipe of the pump to the discharge-pipe of the pump, which pipe passed around the rotary-pump.

Q. 14. I now show you several photographic views,  
1416 "cabinet size" among photographers. Take them, examine them carefully, and then state whether you discover among any of them the device referred to in your last answer for passing water from a hydrant and its suction-pipe connection around the rotary water-pump to the discharging pipe on the opposite side, so as to throw water upon a fire from the hydrant without the



aid of the water-pump or steam-power; and, if you find among them any such device, please show it to the examiner, so that he may identify the same as a part of  
 1417 your answer to the question.

A. I discover in "Complainant's Exhibit, Photographic view, No. 7," an exact likeness of the pump, and the arrangement for passing water when the engine was not at work.

Q. 15. Please to point out to the examiner that particular part, or device, referred to by you in your several answers, for the passing of water around the main water-pump from the suction-pipe to the discharging pipe so as to deliver water upon a fire without the  
 1418 aid of the water-pump or steam-power. And when you shall have done that, I request the examiner to mark that part in red ink, and understand to what you refer for that purpose.

A. I point it to examiner for him to mark with red ink.

The examiner marks that portion pointed out by witness with red ink between the two points designated by him.

Q. 16. By what power was the water forced through  
 1419 that device from the hydrant to a fire, if any?

A. By the hydrant pressure.

Q. 17. Will you please explain why it was that you sometimes delivered water from the hydrant through the devices which you have described, and delivered the same on a fire by hydrant pressure as you have testified?

A. We often arrived to a fire before we had steam on the boiler, and used this means for playing a stream on a fire while we were getting up steam.

1420 Q. 18. While you were getting up steam for what purpose?

A. To run the engine that operated the rotary-pump.

Q. 19. I observe in "Complainant's Exhibit, Photographic view, No. 7, August 7, 1879, C. C. C., Special Examiner," that you have caused the examiner to mark in red ink a pipe, or tube, leading from and con-

1421 nected to a horizontal tube, up to and connected with a square box above the rotary water-pump, as being the device referred to by you for passing water under hydrant pressure around the main water-pump, to be delivered on a fire while the engine was making steam sufficient to operate the steam-pistons and main water-pump. I desire to inquire of you whether that tube or pipe had a valve, cock, or faucet for any purpose?

A. It had a plug-cock just as this view referred to represents.

1422 Q. 20. What was, as near as you remember, the inner diameter of that pipe, or tube, referred to by you in your answers on that subject?

A. I should think about two inches, — nothing less. It might have been a trifle larger.

Q. 21. With the engineer facing the steam-boiler in rear of the engine, upon what side of the engine or main water-pump was that tube, or pipe, and "plug-cock" located?

A. On the right-hand side, if he was in the rear of the engine.

1423 Q. 22. And that side would be the side directly opposite to where the engineer would stand to open the throttle-valve to examine the water and steam gauges, or to handle other parts of the engine necessary during its operation under steam-power, would it not?

A. It would be.

Q. 23. Was it so conveniently located that the engineer could get to it as readily as the parts named in the last question?

Objected to as immaterial.

A. It was not.

1424 Q. 24. Could he get to it at all, without considerable trouble and inconvenience, while the engine was operating under steam-power?

Same objection.

A. In order to get to it he would have to go under the tank or around the engine.

25. He could not operate it at all, then, from the front side of the engine, where he would stand to operate the other parts of the engine: is that it?

Same objection, and as leading.

1425 A. That's correct.

Q. 26. Now, after the engineer had gone under the water-tank, or walked around the engine, as you have stated, to reach this tube to which you have referred, and to the "plug-cock" therein which you have described, what conveniences, if any, or by what means, if any, did he open or close that "plug-cock" for any purpose?

Same objection.

A. Used a wrench.

1426 Q. 27. The wrench referred to by you in your last answer is one fitting upon the square end of the "plug-cock," as shown in the photographic views before you, was it not?

A. Yes, sir: the same.

Q. 28. Before he could operate that cock, after consuming a considerable time to get to it, as you have stated, he would have to take the wrench and apply it to the square end, would he not? I now refer to the engine as you first saw it and first used it.

1427 Objected to as leading, and containing statements not made by the witness.

A. That was the condition of things when I first took charge of the engine.

Q. 29. Did you ever operate that engine, while you had charge of it, at any other time or place than at a fire, or in attending to an alarm of fire?

A. I have; in playing out to try the engine when we had been a long time without going to a fire, and in pumping out water-reservoirs when the city wanted

1428 them cleaned out.

Q. 30. While you had charge of that engine, as you have stated on this examination, did you ever use the pipe, or tube, with the "plug-cock" in it, which the examiner has marked in red ink under your directions, and which I now show you, for any other purpose or purposes than those fully and distinctly stated by you on this examination to-day?

Objected to as incompetent to disprove or correct testimony of this witness given for the defendants

1429 herein, the witness having made no statement of error or mistake in his former testimony.

A. There might have something come up that I used it for different purposes. We quite often use things for different purposes than what they are intended for, about our work.

Q. 31. Do you remember of any thing now of that kind during the time referred to?

Same objection.

A. I don't seem to remember any thing now, but I  
1430 might after refreshing my memory.

Q. 32. Give your present best recollections on that subject.

Same objection.

A. My best recollections are, that we used it to play a hydrant stream on a fire when we had not steam to work the rotary-engine that drove the rotary-pump. The engine that drove the rotary-pump was a reciprocating engine.

Q. 33. And for nothing else?

1431 Same objection.

A. And for nothing else, to the best of my present recollections.

Q. 34. You have now given all of your best present recollections on the subject inquired about, have you not?

Same objection.

A. Yes.

Q. 35. You have spoken that you might refresh your recollections about this matter. Do you desire to  
1432 take any time for that purpose, or are you satisfied with the answers you have already given?

A. I am satisfied with my answers, and ask for no time for refreshing my memory, so far as I am concerned.

*Cross-examination by C. WYLLYS BETTS, Esq., of Counsel for Defendants.*

× Q. 36. After answering the last question, you added, did you not, stating to Mr. Norton that it need  
1433 not be put on the record, "the fact is, that, if you keep on asking, I shall keep on remembering new things"?

A. I did.

× Q. 37. And that is so, is it not?

A. It is.

× Q. 38. Look at the "Complainant's Exhibit, No. 7," on which the pipe was marked in red ink, and state how far from the middle, between the ends of the suction-pipe, was the point at which the pipe marked in red ink enters the suction.

1434 A. It enters as near the centre of the suction as it could be got from the pump. It was as close to the pump as they could get it and make a job of it.

× Q. 39. What was the breadth of the box in which the rotary-pump worked?

A. I should judge about nine or ten inches, to the best of my recollection.

× Q. 40. If the wrench upon the plug-cock referred to by you should be turned so as to open that plug-cock, in what position would it be?

1435 A. There is the position it would be. (Witness picks up a photograph while making his answer.) The handle should point to the ground.

× Q. 41. The engineer, when operating the engine and standing on the left-hand side facing the engine, would have to reach about how much farther under the tank to take hold of that wrench, than he would if the pipe was on the other side of the rotary-box nine inches wide?

A. He couldn't very well get hold of it, any way,  
1436 without getting under the tank, when the cock was shut, because the handle pointed from him.

× Q. 42. But the plug-cock would shut just as well, would it not, with the handle pointing towards him?

A. I think there wasn't room to have the handle, on account of the wheel hitting it, and the end of the handle coming so close to the pump.

× Q. 43. You did often open or close this plug-cock at fires, did you not, by reaching under the tank  
1437 from the left-hand side facing the engine, instead of going around the engine?

A. I did, by going under the tank. I always had to go under, — clear under it.

× Q. 44. When the engine was working at a fire, and when you wished to pump water into the boiler, did you ever make use of this plug-cock? If so, what did you do?

1438 Objected to by counsel for complainant as not coming within the scope of cross-examination; and, second, because the witness has already testified that he has no recollection at this time of this device being used for any other purpose than as stated on his direct examination.

Defendants' counsel objects to prompting the witness.

A. No, sir: never. When the engine was working at a fire the pumps were always running, and we used the pumps that were attached to the engine for pumping water into the boiler. That had nothing to do  
1439 with getting water into the boiler.

× Q. 45. Do you wish, in this testimony that you have given to-day, to retract any thing that you testified to upon your former examination on behalf of defendant?

Objected to by counsel for complainant as not being in proper cross-examination of the witness at this time. 2d, Because the witness has not been introduced for any such purpose by counsel for complainant. 3d, Because the witness has been introduced for the sole and  
1440 only purpose of continuing in this form the cross-examination of the witness, he having been produced originally by and on the part of defendants; and the witness, therefore, has nothing to retract, but simply to continue testimony under cross-examination, and also in rebuttal of the testimony of Mr. Bean and other witnesses.

A. I would say, that, in this evidence, as in my former examination, I am giving evidence from the best of my recollection, and I don't remember of any  
1441 thing I want to retract in either case.

× Q. 46. Do you remember of any occasion at a fire when you did not wish to throw water upon a fire, and when at the same time it was necessary to pump water into the boiler?

A. There were several occasions.

× Q. 47. How did you pump it in, when you were not throwing water on a fire?

A. Started up our engine, and ran our pumps that were attached to the engine for that purpose.

1442 × Q. 48. Do you mean that these pumps worked separately from the rotary-pump?

A. They all worked together.

× Q. 49. If, then, the rotary-pump was working and the engine was not throwing water, where did the water go which passed through the rotary-pump while you were pumping water into the boiler?

At request of counsel for defendants, the examiner notes that counsel for complainant answers the question by saying, "It went into the boiler, of course, 1443 until the boiler got full."

Complainant's counsel, not having been sworn as a witness, withdraws the answer jokingly made to counsel, and expresses great sorrow and contrition of heart at having interrupted the proceedings in the manner stated.

Defendants' counsel objects to this method of "joking," and states that he will move to strike out the evidence of this witness on behalf of complainant on the ground that a proper cross-examination has thus a 1444 second time been prevented.

A. It didn't pass through the rotary-pump. We opened a vacuum-cock in the suction, and let the rotary-pump pump air instead of water, if she was draughting from the reservoir, or dock, that prevented her from draughting; if at a hydrant, we shut the hydrant off and opened the vacuum cock, and the engine would do the same thing.

× Q. 50. You could not, then, pump the water into the boiler, when connected with a hydrant, without 1445 shutting off the hydrant, opening the vacuum-cock, at times when you were not throwing water through the leading hose?

A. I could. I had a means of feeding the boiler with the rotary, when the leading hose was all shut off, by running the engine slow. We had an independent

feed from the rotary-pump to the boiler, and two other pumps beside.

× Q. 51. Which method did you usually adopt?

A. We didn't have to do that often. I have fed  
1446 both ways several times. I couldn't say which I did the most.

× Q. 52. You could have done the same thing, could you not, by turning on the plug-cock, so that the water would pass down from the discharge to the suction, and allow the engine to keep running without throwing water through the hose?

Objected to by counsel for complainant, as the question before the court is, not what *could* have been done, but, what *was* done at the time stated. The question  
1447 is therefore immaterial, irregular, and incompetent on cross-examination.

A. As I sit here and listen to the questions asked me, I think of many things that I *could* have done in connection with my duties *then*, that I did *not* do.

× Q. 53. Question repeated; and the witness is requested to answer whether he could, or could not, have fed the boiler in the manner stated in the last question, without reference to the objections of counsel as to immateriality, that being for the Court only to  
1448 decide.

Same objections as before; and, further, that the witness has already answered fully the question.

A. I should give it as my opinion in viewing this photograph ("Complainant's Exhibit, Photographic view, No. 7") that I have before me, it could be done.

× Q. 54. I do not ask your opinion from the photograph, but I ask you to state whether, or not, that is a fact, from your memory, of the capacities of your engine, as testified to by you to-day, and on your former  
1449 examination; and I therefore repeat the question.

Same objections as before.

A. I see no reason why it couldn't be done; because I run my engine and fed the boiler without opening that cock: and I see no reason why it shouldn't run with it open just as well, and feed the boiler.

× Q. 55. From what part of the engine did you draw water to feed the boiler?



A. When we fed with the regular feed-pumps, we took it from a tank; and when we fed with a rotary-  
 1450 pump, we took it from whatever place we were draughting from, right from the pump.

× Q. 56. What part of the pump?

A. There is only one part of a pump to take water from and pump it into the boiler, and that is the discharge-pipe.

× Q. 57. How large an aperture was there in this discharge-pipe for the tube that led to the boiler?

A. I don't know as I could give it exact, but I should judge somewhere from an inch to an inch and a  
 1451 quarter: call it an inch.

× Q. 58. Look at "Complainant's Exhibit, Photographic view, No. 8," and state whether that aperture is shown.

A. On examination I see a white spot in the rear background which shows it.

× Q. 59. I understand you, then, that you could run your engine sufficiently slow to throw a stream of water through that minute aperture, without opening the plug-cock, and without throwing water through the  
 1452 hose?

A. Yes, sir. I have done it a great many times. There were two engines connected at right angles which allowed me to do so.

× Q. 60. Why could you not throw water through this aperture with the water-gates closed, and while the engine was running at full speed?

A. You couldn't run an engine at full speed with the water-gates closed, that is why you couldn't, unless you call full speed two or three revolutions per minute; that would be the full speed of it. I will here  
 1453 state that the speed of an engine is governed by the amount of the steam on the pistons and the size of the water-discharge from the pump; and for that reason you couldn't expect to get as high rate of speed, pumping through an inch hole, as you could through a four inch.

× Q. 61. In order to drive the water through this aperture, you were obliged to shut off the steam partly, were you not?

1454 A. Always run the engine slower.

× Q. 62. The smallness of the aperture by itself would not make the engine run more slowly, would it?

A. It would: and if I run my engine fast, it would fill the engine up quickly; put too much cold water into my boiler at once.

× Q. 63. If you should attempt to throw water through this aperture with the same pressure of steam that you used when the engine was running at full speed, it would strain the engine, would it not, and  
1455 you were therefore obliged to shut off steam?

A. Not necessarily. The engines were made to stand the pressure they were allowed to carry. There would be no dangerous extra strain that would hazard the safety of the engine at all. Quite often they would get a kink in the hose, and it would slow the engine down just the same as if I was feeding in the boiler with the discharge-gates shut. A rotary is different in that respect from a plunger pump. The water in the plunger-pump is bound to go somewhere,  
1456 or stop the engine. In the rotary-pump the water is carried around by the teeth or gears or cams,— there are so many different shapes of them you cannot designate them hardly.

× Q. 64. You could, however, keep the engine running at full speed with the water-gates closed, and without slowing down at all, by turning the plug-cock in the pipe leading from the discharge to the suction, wide open, could you not?

A. That photograph looks as though you might  
1457 help it some. I don't think, according to the size of the pipe, that it would be large enough to deliver all the water the pump was capable of throwing, no more than the little one in the tank; that wouldn't take a quarter part of what the engine was capable of throwing.

Witness refers to "Complainant's Exhibit, Photographic view, No. 7," in making last answer.

× Q. 65. Have you ever run your engine at a fire at full speed, throwing water through a single two-  
1458 inch nozzle?

A. Never used such nozzle at a fire in any of my experience. An inch and a quarter is about the largest we ever used. In playing a single stream, one and one-fourth inch to one and three-eighths inch is about what they played in those days; and in two streams, they would be about one and one-eighth inch,—that's about what they used to play.

× Q. 66. And with single stream, and one and one-fourth inch nozzle, you could run the engine at its  
1459 full speed, could you not?

A. She would run with all the speed that was due to that size of nozzle. It wouldn't go at as high a rate of speed as it would with two streams of the same size. The more streams of the same size, the faster the engine would run, and the less pressure on the water-gauge.

× Q. 67. Now state why the engine would not run as fast with the water-gates closed, and with the plug-cock in the copper pipe leading from discharge to suction wide open, as it would while throwing a one and one-fourth inch stream, as stated in your last answer.  
1460

A. I didn't say it wouldn't. I don't say that it won't run as fast. It might go faster, for all that I know. That would be governed by whether you were draughting your water, or whether it was forced into the suction by hydrant pressure. In the one case, the pump would have the force of the hydrant to help the pump to force it around through this pipe and plug-cock; and in the other the pump would have to form a  
1461 vacuum, pumping the air out of the suction-pipe. It would be the same as lifting a volume of water, and the other would have forty-five pounds hydrant pressure to help it.

× Q. 68. About what pressure to the square inch was there upon the hose which the engine was running? State, if you can, the different pressures, with different nozzles, what the law was.

A. We had orders from the chief engineer never to exceed a hundred pounds pressure, except on a very  
1462 high building, where we couldn't get the water on with that pressure; but I have run the pressure up to one

hundred and seventy-five pounds on very high buildings, when I have been over to the city.

*Direct Examination resumed.*

Q. 69. On your cross-examination to-day you spoke something about opening a cock in the suction-pipe connecting the rotary water-pump to the hydrant, so as to break the vacuum on that side of the pump. I now  
1463 hand to you twelve photographic views, six being cabinet size, and six being card size, among photographers. Please examine all of those, and point out the cock you referred to as a cock for breaking the vacuum. And state on how many of such cards you find said cock, if on any of them.

A. I find it on six of the card size, and one of the cabinet size.

Q. 70. Please ask the examiner to mark with red ink on one of those cards, the cock referred to in your  
1464 last answer.

The examiner marks with a red-ink cross on the part of "Complainant's Exhibit, Photograph No. 1, July 10, 1879," the cock referred to by witness.

Q. 71. With that cock open, and the vacuum broken in that suction tube, or pipe, in the rotary-pump engine referred to on your direct examination, state whether, from your experience with that engine as its engineer, the rotary water-pump would draw and discharge as much water under same rate of speed as it  
1465 would were that cock closed and the vacuum preserved intact.

A. If it had to draught water it wouldn't work at all. Couldn't get any water if that was open, if draughting; but if working from a hydrant, of course you would get water; because you have hydrant pressure forcing water into the suction.

Q. 72. Then, if I understand you correctly, that cock was a "relief valve," or cock, was it not?

Objected to as leading.

1466 A. For breaking the vacuum in case we wanted to run the engine without pumping.

Q. 73. Upon that engine, state whether, or not, there

was a separate and independent chamber, known as a vacuum-chamber, connected with the main water-pump.

Objected to as immaterial as to what name it was known by.

A. Not to my knowledge.

Q. 74. State whether upon that engine there was a separate or independent chamber known as an air-chamber, and immediately connected with the main water-pump.

A. The forward end of the tank we used to call an air-chamber, from which we took the leading hose or discharging pipe to discharge water on a fire.

Q. 75. About how far from the rotary-pump was located on that engine the air-chamber referred to in your last answer?

A. I should judge about four feet.

Q. 76. At some stage during your cross-examination to-day, defendants' counsel was pleased to spread upon the record a remark made by me. State whether you have been influenced in any way or manner, in your cross-examination to-day, in consequence of that remark which I, at the time, expressed many regrets at having made.

A. I have not been influenced by that, or any other remark that any one has made, in giving my evidence.

Q. 77. On your cross-examination, I understood you to state substantially that there was a substantial and material difference in the construction, as well as in the character and operation, between a rotary water-pump steam fire-engine and a piston plunger or reciprocating water-pump of a steam fire-engine. Am I correct in this understanding of your testimony on that subject?

Objected to as leading.

A. Yes, sir.

*Cross-Examination resumed.*

Q. 78. When your engine was pumping water, did not the opposite end of the suction-tube, which I now mark S in red ink on card exhibit No. 1, act as a vacuum-chamber at the end opposite to that at which the suction-hose was attached?

A. That would act as a vacuum-chamber, although on a rotary-pump it isn't necessary; and on plunger pumps they don't regard it as such, because they put on an independent one. If they depended on that, they wouldn't do it.

1471   × Q. 79. In one of your answers to cross-questions, referred to in re-direct question 77, as stating a difference between rotary and piston pumps, you state that the water would be carried round and round by the flanges, when the exit for the water was cut off. Do you mean that the rotary-pump would continue running, and thus carry the water round and round, without exercising any suction or discharge force?

A. I mean to say there will enough go round to allow the engine to run at a low rate of speed. I mean  
1472 to say there will enough go by the ends of the teeth; in other words, that the pump will leak enough to let the engine run slow, which I have seen done a number of times when the firemen have shut off the water without first informing me they were going to do so.

× Q. 80. I understand you, then, that this would not occur in a case where the engine did not leak?

A. All rotary-pumps that I have seen would do that, when they shut the water off suddenly.

× Q. 81. State what others you have seen do this.

1473 A. I don't know as I can name the engines. I have been in the Boston Fire-Department several years, and have seen it done.

× Q. 82. Look at the card marked "Complainant's Exhibit, Photographic view, No. 8," and state whether, in the revolution of the rotary-gears, all the water behind each successive flange would not be forced into the discharge-side of the pump as that flange passed the uttermost point in its revolution.

A. After you get a certain pressure on the discharge-pump, the pump will go so slow that as much  
1474 water will pass by the ends of the teeth and the sides of the gear and teeth, and be carried down the centre, as will allow the engine to perform a certain number of revolutions.

× Q. 83. On such occasions, the water-gauge will indicate a constantly increasing pressure, will it not?

A. No, sir: it is limited. When the water gets up to a certain pressure, the water will pass by the ends of the teeth and gears. I answered it in the other question.  
1475

× Q. 84. When the water was shut off by the firemen, without letting you know beforehand, how much would the water-gauge rise if you were running at full speed?

A. I don't know as I ever took particular note enough to remember exactly. I have noticed the engine slow down. When it was going two hundred revolutions, and they shut a gate off without letting me know, she would slow down to twenty. Instead of  
1476 going steady, there would be jerking by the centres.

× Q. 85. There would be a considerable rise in the water-gauge at such times, would there not?

A. I suppose there would. I should judge there would.

× Q. 86. What would this rise in the water-gauge indicate?

A. A water-gauge was put on to indicate pressure, — pressure on the hose, — that's what it was put there for.

1477 × Q. 87. Now, on the occasions when the water was cut off, as you have stated, and the engine would slow down to twenty revolutions, and would be jerking by the centres, and the pressure in the water-gauge was increased, is it not a fact that the engine would have at once resumed its higher rate of motion, and the jerking motion have ceased, and the pressure in the water-gauge have diminished to its former level, if you had opened the plug-cock in the pipe connecting the discharge with the suction, and marked in red ink on  
1478 photographic view No. 7?

Complainant's counsel objects to the question, 1st, As there is no pipe in the photograph view referred to having connections as stated in the question. 2d, The true question before the Court is, *not* what the witness *might* or *could* have done between November, 1859, and January, 1863, but what *did* he do as to the matter inquired about. The question is therefore incompe-

1479 tent, immaterial, and not within the scope of cross-examination on that subject; and, 3d, It is improper to inquire into the speculations of the witness at so late a date, and so remote from the time the witness says he first took charge of the engine referred to on his direct examination.

Defendants' counsel renews his objection and notice given after the 49th question.

A. It is reasonable to suppose it would help the engine, the same as if they opened one of the gates to the leading hose. If you had asked me if they took one of the caps off of the suction, I must say it would  
1480 relieve it.

*Direct Examination resumed.*

Q. 88. The object of a water-pressure gauge is to inform the engineer of the degree of pressure going on in the main water-pump, so that he may, by opening or closing the throttle-valve, increase or diminish the speed of the engine, and thereby relieve or increase the pressure, is it not?

A. That's so.  
1481

C. W. DOTEN.

Attest:

CHAS. C. CONANT,  
*Special Examiner.*

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DEPOSITION OF JOHN RAY.

1482 *Direct Examination by* MARCUS P. NORTON, Esq., *of*  
*Counsel for Complainant.*

BOSTON, August 12, 1879.

Q. 1. Have you previously been examined as a witness in this cause on behalf of the defendants?

A. I have.

Q. 2. About when was that?

A. During last spring.

Q. 3. You are now engineer, and in charge of what steam fire-engine in this city, if any?



- 1483 A. Engine No. 1, South Boston.
- Q. 4. You have been in the fire-department of the city of Boston for about how many years?
- A. Twenty-two years.
- Q. 5. And engineer of a steam fire-engine for about how many years?
- A. Nineteen years.
- Q. 6. Give the name of the steam fire-engine of which you first had charge in the fire-department of the city of Boston.
- 1484 A. "Lawrence" engine No. 7.
- Q. 7. You had charge of that engine for about how many successive years?
- A. Two years and a half.
- Q. 8. What was that engine, a rotary water-pump, or a piston or plunger pump, for drawing and discharging water on to a fire?
- A. Single-piston engine, with double-acting plunger or piston pump.
- Q. 9. Do you know, and, if you do, state who built steam fire-engine "Lawrence," of which you were engineer about two and a half years, as testified?
- 1485 A. Built by Scott & Bean, Lawrence, Mass. Thomas Scott and Nehemiah S. Bean.
- Q. 10. State what year, if you know, when that engine first went into service in the fire-department of the city of Boston.
- A. 1859. It was run one year by the builders, by contract, for the city of Boston.
- Q. 11. Is that steam fire-engine now in service in the fire-department of the city of Boston?
- 1486 A. No, sir.
- Q. 12. When did it go out of that service, if you know?
- A. July, 1862.
- Q. 13. Where did that engine go to at that time, if you know? and what has become of it, if you know?
- A. It was sold to the Norway Iron Company's Works, South Boston, a short time after going out of service of the fire-department of Boston.
- 1487 Q. 14. Do you know where that engine now is? If you do, state it.

A. I know where it was last spring. It was at the Norway Iron Works. I haven't seen it since.

Q. 15. Who, if you know, was the engineer, and in charge of that engine at the time it went out of the service of the fire-department of the city of Boston?

A. I had charge of it myself.

Q. 16. And you had that charge from the time it went into the service of the fire-department of the city  
1488 of Boston, until it went out of that service?

A. From February 1, 1860, until July or August, 1862, the time it was taken out of service.

Q. 17. State, if you know, who was engineer, or had charge of that engine during the year it was run by contract with Scott & Bean for the city of Boston.

A. Mr. Scott had the principal charge of it: he was acting as engineer of it.

Q. 18. Who was Scott's assistant engineer during that time, if you know?

1489 A. Simon E. Furlong.

Q. 19. What alterations or changes or modifications or additions, if any, did you make to the steam fire-engine "Lawrence," that made it, in some respects, substantially and materially different, if any, than it was when you first took charge of it and operated it, in the manner you have testified?

A. When I took charge of the engine it had a connection with one of the outlets. In that connection there was a piece of inch and a quarter pipe screwed  
1490 into it, a plug-cock on the end of that, a quarter-turn attached to it, a piece of pipe screwed into this quarter-turn for the purpose of relieving the pressure in the pressure-chamber or hose while the engine was working. I put an additional quarter-turn, or elbow, on to the end of the piece of pipe, and carried it off into the inlet, or vacuum-chamber.

Q. 20. Before you made the additions to that pipe, which you saw had a cock in the end of it, state when the cock was open where the water was discharged to,  
1491 if anywhere.

A. It went out on to the ground.

Q. 21. Was it discharged on the ground in force, when the engine was in operation?

A. I have seen it with such force as to remove the paving-stones from the street.

Q. 22. Then, if I understand you correctly, this pipe had a "plug-cock" in its end, which cock, when open, allowed the water to be discharged in great force on the ground or street pavement, tearing up both  
1492 pavement and earth, to the injury of the street or sidewalk. Am I substantially correct in this understanding of your previous answer?

A. Exactly: damaging the street or sidewalk, and a great waste of water.

Q. 23. This pipe, or "plug-cock," before you made the alteration, opened out in the open air, did it not?

A. Yes, sir.

Q. 24. And this pipe and "plug-cock," which you have described, were on that engine as you have de-  
1493 scribed them, when you first saw or first knew that engine, were they, or were they not?

A. Yes, sir: they were.

Q. 25. When you attached to the outer end of that pipe having that "plug-cock" in it, and attached the opposite end of the piece of pipe, which you applied to the inlet, or vacuum-chamber, as you have stated, was there any discharge of water on the ground or pavement after that, when that "plug-cock" was open?

A. No, sir.

1494 Q. 26. Where did the water go to from the pressure-chamber through that "plug-cock" when that engine was in operation, after you had made this attachment of which you speak?

A. Into the inlet, or vacuum-chamber.

Q. 27. It was returned, then, from the pressure or discharging chamber back into the inlet, or supply chamber: was that it?

A. Yes, sir.

Q. 28. What year was it, if you remember, that  
1495 you made this change or addition that you have just described?

A. Latter part of July, 1861.

Q. 29. Did Mr. James Knibbs have any connection with, or knowledge of, this change and addition, which you say you made in that engine?

A. Not to my knowledge.

Q. 30. Previous to the last part of July, 1861, had you ever seen, heard of, or known of, an invention, or device, for returning water under excessive pressure, 1496 from the pressure or discharging side of a steam fire-engine, back and into the inlet, or supply-side, of the same engine, and substantially such as you have now described?

A. No, sir: I never had.

Q. 31. You put that device on that engine in the latter part of July, 1861, as an experiment, to determine the results which you desired to attain by it. Is that it?

A. Yes, sir.

1497 Q. 32. And that engine went out of the service of the fire-department within a year thereafter, did it not?

A. Yes, sir.

Q. 33. And you have never used the engine since then, have you?

A. No, sir.

Q. 34. The cock which you speak of as being in the end of the pipe before you made the alterations, was what is commonly known as a "plug-cock," was it not?

1498 A. Yes, sir: inch and a quarter plug-cock.

Q. 35. Have you ever put a device of that description, or substantially the same, on any other steam fire-engine since then? And, if you have, give the name of that engine, and when and where and why you did it, as well as you remember.

A. In the latter part of 1864 I was transferred from engine "No. 7" to engine "No. 1." Engine "No. 1" was built by the Boston Locomotive Works, under the supervision of Mr. N. S. Bean. When I took charge 1499 of the engine, in 1864, it did not have a relief-pipe; and I got a permit to put one on to it in the latter part of 1864.

Q. 36. From whom did you get this permit you speak about?

A. From the chief engineer, George W. Bird.

Q. 37. Of the fire-department of the city of Boston?

A. Yes, sir.

Q. 38. Now please go on and describe, as near as you remember, this device, which, you say, in the late part of 1864, you put on steam fire-engine "No. 1," by permission of the chief engineer of the city of Boston, — a device which you call a "relief-pipe." State to what each end of that pipe was connected, and whether it had in it a valve or cock of any description.

A. The pump was a horizontal piston-pump. I tapped into the upper side of the pressure-chamber, screwed in a piece of copper pipe about six inches long; in the end of that I put what is called an angle valve; at the other end of this valve I had a piece of copper pipe sufficient in length to reach the under side of the inlet, or vacuum chamber, and these made connection.

Q. 39. Then, if I understand you correctly, one end of this pipe, which you call a "relief-pipe," opened into the force or discharging chamber, while its other end opened into the inlet, or receiving chamber, of the main water-pump. Is that it?

A. Yes, sir.

Q. 40. And there was a water passageway between these two chambers, was there, by means of this pipe which you call a "relief-pipe"?

A. Yes, sir.

Q. 41. About what was the inner diameter of that pipe, if you recollect?

A. About one and one-eighth inch.

Q. 42. And it had in it, between the two chambers, a valve for opening and closing the water passageway, did it?

A. Yes, sir.

Q. 43. Where is that engine now, if you know?

A. Last I heard of it, it was at the storehouse of the Boston fire-department. Couldn't say whether it is there now, or not.

Q. 44. How long was that engine in service in the fire-department of the city of Boston, if you know?

A. Thirteen years and a half, — in active service.

Q. 45. You say that that engine was built by the

Boston Locomotive Works, under the direction or supervision of N. S. Bean?

1504 A. Yes, sir.

Q. 46. What N. S. Bean is that? who is he, and where does he reside, if you know?

A. Mr. Bean was one of the parties who built "Lawrence" engine No. 7. After superintending the building of engine "No. 1," at Boston Locomotive Works, he went to the Amoskeag Manufacturing Company, at Manchester, N.H., to superintend the building of steam fire-engines at that place.

Q. 47. In what year was this steam fire-engine  
1505 built and delivered to the city of Boston, if you know?

A. Built in 1859. The city of Boston purchased it in December, 1859, and it was put in service at that time.

Q. 48. And from that time till the last part of 1864, it had upon it no device whatever for returning water under excessive pressure from the pressure or discharging chamber back and into the inlet, or supply chamber, of its main water-pump. Is that it?

A. No, sir: it had not.

1506 Q. 49. What steam fire-engine took the place of this engine when it went out of active service of the fire-department of the city of Boston?

A. An engine built by the Amoskeag Company, Manchester, N.H., known as a double-plunger, crane-neck engine.

Q. 50. What was its name, if you know, when it first came to the fire-department of the city of Boston from the Amoskeag Manufacturing Company, Manchester, N.H.?

1507 A. Didn't have any name upon it until after it was put in service; then it was known as "Mazeppa" No. 1.

Q. 51. In what year was it put in service in the fire-department of the city of Boston, if you remember?

A. September 17, 1872.

Q. 52. Did that engine, when it came into the service of the fire-department of the city of Boston from the Amoskeag Manufacturing Company, have, upon its main water-pump, an invention, or device, for returning

1508 excessive water under pressure from the pressure or discharging chamber to the inlet, or supplying chamber, by means of an opening, conduit, or water passageway, between those two chambers, having in combination therewith a regulating valve so constructed, arranged, and operated in connection therewith as to open from, or close upon, a valve-seat in such opening, conduit, or water passageway, so as to regulate the flow or pressure of water in its main water-pump from such pressure to such supply chamber?

A. Yes, sir: it has a valve that came down on the  
1509 engine known as the "Perley valve." I have used it quite frequently for relieving pressure on the hose. Couldn't say positively how the valves are constructed, as I never had the valve off.

Q. 53. That valve, however constructed, regulates the pressure upon the discharging hose, as well as the water-pressure in the pressure-chamber, as well, also, the flow of water from this pressure-chamber back and into the supplying chamber, does it not?

A. Yes, sir.

1510 Q. 54. It is automatic in its action, is it not?

A. Automatically, or worked by hand. Both ways.

Q. 55. I desire now to direct your attention to the subject of main rotary water-pumps of steam fire-engines, having examined you all I care to with respect to piston or plunger main water-pumps for such engines; and I desire you to state whether you have ever seen a steam fire-engine having a main rotary water-pump for discharging or throwing water on a fire.

A. I have.

1511 Q. 56. Where and when first did you see an engine of that description?

A. The first engine I ever saw of that description was at a fire on Washington Street, the latter part of November, 1859. I was connected with a hand-engine at that time, and was at work at the same fire, and saw this Manchester rotary-engine working a short distance off from where I stood.

Q. 57. What was the name of that rotary-engine, if you remember?

1512 A. I wouldn't be positive it had a name on at that time. I don't recollect of seeing any name or number, but afterwards I know it was named and numbered "Eagle" No. 3.

Q. 58. I now show you six photographic views, cabinet size, "Complainant's Exhibits, Nos. 7 to 12" inclusive. Take them and examine them, and state whether those, in your judgment, represent the rotary water-pump and its component parts, such as was upon engine "Eagle" No. 3 when you first knew that engine,  
1513 and so far as you are able to state at the present time, those cards representing to view the several parts of which the rotary water-pump is composed as applied to steam fire-engines.

A. My experience in regard to steam fire-engines with rotary-pumps is very brief. I never had much to do with them. I never had charge of but two, and that was of short duration. I never run engine "No. 3" at a fire; but I have worked engine "No. 4," a similarly constructed engine, and a spare engine that didn't  
1514 have any number. At the time I had it, it was not numbered. It was called a spare engine, and I was using it as a relief. I never saw one of those engines apart; and this is the first time I ever saw a drawing of one of that shape, showing the internal workings of the pump.

Q. 59. Look at photographic view which I now show you, "Complainant's Exhibit, No. 7, August 7, 1879," having a pipe with a "plug-cock" at or near its lower end, and having a mark in red ink its entire  
1515 length, its lower end bolted to a horizontal pipe, and its upper end bolted to a square box having a circular-shaped top. Examine it, and then state, if you please, whether the rotary water-pump engines mentioned by you in your last answer had a pipe and "plug-cock" of that description connected with those parts, substantially as shown in that photographic view.

A. It had a pipe connected with the inlet chamber, or vacuum-chamber, to the pressure or outlet chamber, with a cock at the lower end similar to the same that  
1516 this represents. Didn't have any handle, — never saw



one with a handle to the cock. If the plug-cock was to be opened on the engine I ran, it would have to be opened with a monkey-wrench. I never opened the cock; never had occasion to.

Q. 60. Point out, or describe, in that photographic view, that part which you call an inlet, or vacuum chamber.

A. I call it this long barrel in front of the pump.

Q. 61. This long barrel to which the lower end  
1517 having a "plug-cock" is attached: is that it?

A. Yes.

Q. 62. On the right-hand side, and in the background of that photographic view, I observe a small "plug-cock" connected with this long barrel. If you know, you may state the purpose or use of that "plug-cock."

A. I should say that was for the air-cock.

Q. 63. And an "air-cock" is for the purpose of admitting aid to break the vacuum: is it not?

1518 A. Yes, sir.

Q. 64. Now, to return to this "plug-cock" in the pipe marked in red ink on that photographic view, I understood you to say that you never opened a cock represented by that on any of those rotary-engines, while the rotary water-pump was in operation under steam-power. Is that correct?

A. No, sir, I never did.

Q. 65. Do you know how many rotary-engines owned by the city of Boston that had that pipe and  
1519 cock on them?

A. I remember of seeing it on engines "No. 3," "No. 4," "No. 5," and "No. 9," and this spare engine that was afterwards "No. 8."

Q. 66. Making five in all?

A. Yes, sir.

Q. 67. How long did you, and on what occasion, did you operate a rotary water-pump steam fire-engine?

A. The first rotary-engine I ever run at a fire was engine "No. 4." I was running it as a relief-engine,  
1520 previous to its being put in service. Went to a fire in South Boston with it in the latter part of April, 1860,

or 1st of May: I am not positive as to date. The fire was in the chemical works on Second Street, South Boston. Worked the engine seven hours. That was the only fire I worked her at. Went to two or three alarms: they didn't happen to be working fires. I worked spare engine "No. 8" at a fire at Rand & Avery's, foot of Washington Street, printers; think it was in the first of 1861; worked there about five or  
 1521 six hours. Those were the only fires I had an opportunity to have charge and work an engine like that one.

Q. 68. How many streams of water did you throw at a fire with either of those engines, at one time?

A. Both fires I worked two streams at each fire, from each engine.

Q. 69. How many outlets had each engine for the attaching of hose to deliver water at a fire?

A. Four outlets.

1522 Q. 70. And, during the times you operated those engines, you never opened this plug with a monkey-wrench, or any thing else, while the rotary-pump or rotary-valve was under motion, under steam-power. Is that it?

A. No, sir, I never did.

Q. 71. What other name, if any, did rotary-engine "No. 4" have?

A. "Barnicoat."

1523 Q. 72. Do you know when these rotary-engines were built, and by whom? and, if you do, you may state the same.

A. Built at Manchester, N.H., by the Amoskeag Manufacturing Company.

Q. 73. It was delivered to the city of Boston, when, if you know?

A. It was in the month of April, 1860; I think it was. It was put in service the sixth or eighth day of May, 1860.

1524 Q. 74. Do you remember a rotary water-pump steam fire-engine, built by the Amoskeag Company for the city of Boston, and known as "Saratoga"?

A. I think I recollect that name. I think it was "No. 5."

Q. 75. In what year did that go into service in the fire-department of the city of Boston?

A. 1861, I think, — wouldn't be positive.

Q. 76. I desire you again to look at the photographic view, having a pipe marked in red ink with a "plug-cock" in its lower end, about which you have already  
1525 testified, and state, if you know, from any source whatever, the use or purposes to which those things were applied on rotary water-pumps, while you knew the rotary water-pump engines in the city of Boston, which you have named, five in all.

Objected to as immaterial and incompetent.

A. From my first and practical knowledge of that pipe, I could not say that I practically knew the use of it; but I have been informed that it was put on for hydrant use. I never had occasion to use it myself,  
1526 and couldn't practically demonstrate it.

Q. 77. You mean hydrant use under hydrant pressure, do you?

A. Yes, sir.

Q. 78. And so as to continue a stream of water from the hydrant, past the rotary-pump while not in motion, to and through hose discharging water on a fire by hydrant pressure. Is that it?

A. Yes, sir.

Q. 79. And you mean to be understood as saying  
1527 that, so far as you know, that pipe and "plug-cock" near its lower end, attached substantially as shown in "Complainant's Photographic view, No. 7," and applied to these rotary-engines owned by and used in the fire-department of the city of Boston, had the general reputation of being a pipe and "plug-cock" for the purposes of passing hydrant water while the engine was not in motion, and as stated by you in your last previous answers. Is that it?

Objected to as leading and incompetent, and as calling  
1528 for hearsay evidence.

A. Never heard of its being used for any other purpose.

Q. 80. Do you know Theodore Hutchings, who at some time has been in the fire-department of the city of Boston?

A. Yes, sir: I am acquainted with him.

Q. 81. Did you know him at some time when he was operating a steam fire-engine here, many years ago?

1529 A. Yes, sir: I became acquainted with him in 1860.

Q. 82. You knew him from 1860, and for several years after that, did you, in the fire-department of this city?

A. Yes, sir: I did.

Q. 83. Did you ever hear him say any thing *pro* or *con* during those years, with reference to this pipe and "plug-cock," as applied to these rotary water-pump engines to which you have testified?

A. No, sir: I never did, until I was called before  
1530 this court.

Q. 84. You mean at this court, at the time you were called as a witness by defendants' counsel?

A. Yes.

Q. 85. Do you know James Young of this city, formerly employed by the fire-department of the city of Boston?

A. Yes, sir.

Q. 86. Please state when you first knew him, and for how many years after, as an employee of the fire-  
1531 department of the city of Boston.

A. 1860 I became acquainted with him. Think he was in the fire-department up to 1877 or 1878. I wouldn't be positive in regard to the year.

Q. 87. During that long period of acquaintance-ship, did you ever hear Young say any thing with reference to this pipe and "plug-cock" on those five fire-engines, when in the fire-department of the city of Boston?

A. No, sir.

1532 Q. 88. You saw Hutchings and Young present last spring, at the time they were examined as witnesses in this cause on part of defendants, did you not?

A. Yes, sir.

Q. 89. And they are the same identical Hutchings and Young you refer to in your last previous answer, are they not?

A. Yes, sir: the same parties.

1583 *Cross-examination by C. WYLLYS BETTS, Esq., of  
Counsel for Defendants.*

× Q. 90. I understand you, that, previous to the latter part of July, 1861, you had never seen, known, or heard of a device applied to a piston or plunger engine for returning water under pressure from the discharge or pressure chamber to the supply or suction chamber. Is that so?

A. No, sir: I never had.

1584 × Q. 91. The application of such a device to a piston or plunger engine, as you applied it to "The Lawrence" in July, 1861, was then entirely your own invention, was it?

A. I considered it so at that time. It was original with me.

× Q. 92. Was this device successful in giving relief to the engine "Lawrence"?

1585 Objected to as immaterial whether it was, or not, unless James Knibbs of Troy, N.Y., was present and took part in the experimenting by Mr. Ray, or at that time had knowledge of its construction, and assented to its use, and continued that knowledge and assent for a period of two or more years thereafter.

A. Yes, sir.

1586 × Q. 93. When you had conceived the idea of connecting the discharge-chamber with the supply-chamber of that engine, in order to give relief to the water under pressure in the discharge-chamber by carrying it back into the supply-chamber, so as not to waste water by discharging it into the street, and when you had carried out that idea by applying the relief valve which you did apply to "The Lawrence," you had achieved all that you intended to accomplish, did you not?

Same objection.

A. Yes, sir.

In view of the answer given by witness, complainant's counsel withdraws objections.

× Q. 94. When you had conceived and carried out that idea, as mentioned in the last question, were any

further experiments necessary in order to demonstrate  
1537 that the idea could successfully be put in practice?

A. Not with me ; not with that engine there wasn't.

× Q. 95. Was there then any thing left to discover in order to complete your invention, as you conceived it?

No, sir.

× Q. 96. It was a matter of common experience, was it not, among persons who had charge of steam fire-engines, that water under pressure in the discharge-chamber of steam fire-engines could be relieved by  
1538 opening a vent into the street?

A. Yes.

× Q. 97. And for how many years prior to July, 1861, had this been done?

A. Two years and a half to my knowledge.

× Q. 98. And it was a matter of common experience, was it not, among such persons, that any vent whatever from the discharge-chamber into the street would give *some* relief to the discharge-chamber, and that a sufficiently large vent would give entire relief?

1539 A. It was so with me. I suppose it was so with others.

× Q. 99. When you therefore had once conceived and carried out the idea of connecting the discharge-chamber with the supply, for the purpose of relieving pressure in the discharge-chamber, if you found that the pipe connecting those chambers was not sufficiently large to give entire relief to the engine, — by which I mean not sufficiently large to allow the engine to run at full speed without throwing any water from the  
1540 hose, — it would require no further invention, would it, to substitute a larger pipe for the one which you had in use? That was a thing which any engineer could have noticed and have done, was it not?

A. Yes, sir: all they would have to do was to increase the size of the pipe.

× Q. 100. After you had once connected the discharge and suction chambers together, by any means, so that water would flow from the discharge into the suction, was there any thing left to discover?

1541 A. Not to my knowledge.

× Q. 101. Would it make any difference in the practical working of the device which you put on the "Lawrence," what parts of the supply and suction chamber were connected together by the pipe?

A. Not any, so long as the ends of the pipe were kept above the discharge-valves and below the inlet-valves.

× Q. 102. From your knowledge of the working of the relief valve which you placed on the "Lawrence" and engine "No. 1," and from your knowledge  
1542 of the working of the rotary steam fire-engines, are you able to say what would be the effect of opening the plug-cock in the pipe marked with red ink on "Complainant's Photographic view, Exhibit No. 7," when the rotary-engine to which it was attached was running at full speed and throwing water through the hose?

Objected to on the ground that the question before the court is not what *might* have been done at the time  
1543 inquired of, but what was *actually* done. 2d, Because the witness has already several times testified that he never opened this "plug-cock" for any purpose while the engine was running under steam-power, it is at this time incompetent and improper to ask the witness what he *might* have done, but did *not* do, with reference to the matter inquired of.

A. From my experience, I could not.

× Q. 103. I do not ask from your experience in working the plug-cock in that way, but from your  
1544 knowledge of the working of a pipe connecting the discharge and supply chambers together on other engines, whether you do not know what the effect of opening that plug-cock would be, whether it would increase or diminish the size of the stream thrown, or have no effect upon it.

Same objections; and the further objection that it is quite obvious, that, if somebody else had taken an egg and broken in the little end, as Columbus did, before he did, they *might* have made it stand on its end as he  
1545 did when he broke it in.

A. It is very evident, if that plug-cock was open, and a hole through the pipe, the water would run from the top down through this piece of pipe.

× Q. 104. Then what effect would that have on the stream of water which the engine was throwing at that time?

Same objection.

A. It would reduce the pressure.

1546 × Q. 105. Do you not think that any competent engineer, who had worked a rotary steam fire-engine with pipe and plug-cock attached, and who knew the construction of the same, and who also had knowledge of relief valves connecting the suction and discharge chambers of the piston or plunger engines, would know that the turning of that plug-cock would have the effect mentioned in your last answer?

Same objection; and, further, as being matter entirely out of the case, and in no wise involved in it, and not within the scope of cross-examination.

1547 A. I think he would.

× Q. 106. Did Theodore Hutchings or James Young ever tell you that they had never used a pipe or plug-cock for any other purpose than to pass water around the pump by hydrant pressure?

A. They did.

1548 × Q. 107. As an independent inventor of the relief valve described, is it, or is it not, your opinion that when the discharge and suction chambers of a piston-engine had once been connected together by a pipe, or water passageway, to the valve in it, which could be opened and closed by the operator, and when it was found by a practical test that the water would pass through this water passageway from discharge to suction when the valve was opened, the invention was then practically carried out?

A. Yes.

1549 × Q. 108. Can you conceive of any further experiments that would be necessary to prove that opening a connection between the discharge and suction would relieve pressure in the discharge-chamber, when such a connection had once been actually made, and had worked successfully?



A. No further experiments with regard to proving that it would relieve the pressure.

*Direct Examination resumed.*

Q. 109. Counsel for defendants during your examination has endeavored to make you an independent inventor of the device and invention upon which this  
1550 suit is founded. When, for the first time, did you first learn that you were an inventor of that description, if at all?

A. I never have been called an inventor. It has been reported I was the first one to put it on to a plunger-engine in the city of Boston; further than that I don't know about its being an invention, or of my being called an inventor.

Q. 110. The report which you speak of in your last answer, — when, for the first time, did you hear of  
1551 that?

A. I think it was about the year 1864.

Q. 111. Can you name any person or persons from whom you heard that? If you can, you may do so.

A. In conversation in an engine-house where I was talking; there was quite a party there, — they were talking about the relief-pipe business, and casually remarked that I was the first one that put it on to a plunger-engine. This was the time I was putting it on to engine "No. 1."

1552 Q. 112. In what part of 1864 was that?

A. Fall of 1864.

Q. 113. Do you remember whether brothers Young and Hutchings were present, or not?

A. No, sir: they were not.

Q. 114. Did you ever apply for a patent of the United States, or anywhere else, upon the device which Mr. Betts has inquired about?

A. No, sir: I never did.

Q. 115. To whom, if to anybody, in 1861, 1862, or  
1553 1863, after you had put that contrivance on the engine "Lawrence," did you communicate what you had done upon that engine in the latter part of July, 1861?

A. Didn't communicate with any one about it.

Q. 116. Did you, in 1861 or 1862, or at any other time thereafter, previous to the first day of January, 1866, make any effort to, or did you intend during that time, to apply for letters-patent of the United States, upon that device?

A. No, sir: I made no plans or drawings of it at 1554 all, and did not intend to apply for a patent.

Q. 117. Previous to July, 1861, and the fall of 1864, did you construct and put upon any engine, or make a model of, the device which you say you put on "The Lawrence" the latter part of July, 1861?

A. No, sir: I did not.

Q. 118. Have you ever since that time communicated with James Knibbs at Troy, in writing or otherwise, claiming to be an older inventor than he was, and that you were entitled to the letters-patent of the 1555 United States upon that device about which defendants' counsel has cross-examined you?

A. No, sir: I never did.

Q. 119. Do you now and here make any claim of that description?

A. No, sir.

Q. 120. Now, previous to the last of July, 1861, when you put that device on the engine "Lawrence," had you ever seen or heard of or known of a device of the kind which you say you put on "The Lawrence" in July, 1861, being at that time, or at any time prior thereto, upon any engine of any description 1556 in this city?

Objected to as leading and indefinite.

A. No, sir.

Q. 121. At the time when, in 1864, you say there was quite a gathering at an engine-house in this city, where the subject-matter of this device was talked over, and it was there stated, as you have said in substance, that that device was first put on an engine by 1557 yourself in July, 1861, did anybody in all that gathering say, or in any manner intimate, that they had ever seen or heard of that invention or device previous to the time when they stated that you had put it on the "Lawrence" engine?

Objected to as immaterial.

A. No, sir.

Q. 122. This gathering was made up principally of engineers, firemen, and others employed by the fire-department of the city of Boston, was it not?

1558 A. Yes, sir.

Q. 123. Do you remember what engine-house it was you were in at that time?

A. Engine-house No. 1.

Q. 124. That was the engine-house that was in your charge, and has been ever since?

A. Yes, sir.

Q. 125. If you remember, please state the name of the steam fire-engine, or engines, that were at that time in that house?

1559 A. Engine "No. 1," built by the Boston Locomotive Works.

Q. 126. And the one of that name that you have previously testified about to-day?

A. Yes, sir.

Q. 127. State whether this invention and device about which you have testified as having been put by you on a steam fire-engine in this city in the fall of 1864, is valuable and useful in the successful operation of a steam fire-engine, considering all and its various  
1560 parts of construction.

A. I should say it was.

Q. 128. Substantially the same device is at present in use on all the steam fire-engines in this city, is it now?

A. Yes, sir, it is.

*Cross-Examination resumed.*

× Q. 129. Was the relief valve which you put on "The Lawrence" generally known among people con-  
1561 nected with the fire-department of the city of Boston, at the time you put it on, or did you keep it a secret?

A. Publicly known, so far as I know. I never tried to keep it a secret. I never made much talk about it; let it introduce itself.

*Direct Examination resumed.*

Q. 130. Your last answer contains all you knew or cared about it at that time ; and where at this time it is you don't know? I now refer you to this contrivance of the last of July, 1861.

Objected to as indefinite and meaningless.

A. No sir, I do not.

Q. 131. I now ask you to answer the first part of the last question, and it refers to what you did at the time inquired about.

Same objection.

A. That was all I knew, or cared to know, about it at that time.

Q. 132. You may state whether at the time the five rotary water-pump engines were delivered to the city of Boston, by the Amoskeag Manufacturing Company of Manchester, N.H., there were water-works and hydrant pressures in that city, from which water was taken for public uses as well as for private purposes.

A. Yes, sir, there was.

Q. 133. These rotary-engines, so far as you know, were attached to such hydrant when required for use at a fire, were they not?

A. They were.

Q. 134. State, if you know, the amount of pressure to the square inch upon any of the hydrants of those water-works.

A. Low service water-works, from thirty-five to fifty-five pounds; high service, fifty to seventy-five pounds.

Q. 135. Suppose any one of these rotary water-pumps were attached to any one of these hydrants, and having on this pipe and "plug-cock" as you have described, and then suppose that cock to be thrown wide open, and the rotary-valve still and the engine not working, state whether, or not, a stream of water would pass from the hydrant to the suction-pipe and "plug-cock" and discharging hose, on the fire.

A. Yes, sir, it would.

Q. 136. And the current and strength of that

stream would depend entirely upon the water-pressure of the hydrant to which that engine was connected, would it not?

A. Yes, sir, it would.

1566 Q. 137. In which engine could you the quicker get up steam to operate its machinery for operative purposes in the effectual drawing and discharging of water on a fire, the rotary water-pump, or the piston or plunger pump engine, so far as you have had experience with either or both?

A. Plunger-pump engines.

JOHN RAY.

Attest :

1567 CHAS. C. CONANT,  
*Special Examiner.*

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DEPOSITION OF SAMUEL C. FORSAITH.

*Direct Examination by* MARCUS P. NORTON, Esq., *of*  
*Counsel for Complainant.*

BOSTON, August 13, 1879.

1668 Q. 1. Please state your name, age, residence, and occupation.

A. Samuel C. Forsaith; fifty-one; Manchester, N.H.; machinist and machine-dealer.

Q. 2. Do you know any thing concerning a steam fire-engine, having a main rotary water-pump, known as "Eagle" No. 3, as to where it now is? If you do, state it.

A. It is in a shed in my machine-shop yard, at Manchester, N.H.

1569 Q. 3. Of whom did you buy that engine?

A. I bought it of a party in Boston.

Q. 4. About when did you buy it?

A. About two years ago.

Q. 5. I now show you six photographic views of rotary water-pump of steam fire-engine, of cabinet size, in evidence in this cause. State, if you know, what

engine, if any, those were taken from, and how you know it.

A. They were taken from the rotary water-pump  
1570 of what is called "Eagle" No. 3. I had the pump taken off myself, and assisted about taking the negatives.

Q. 6. By whom were those taken, if you know.

A. By Mr. Quint; S. D., I think.

Q. 7. I now show you six photographic views, card size, exhibits in this case. State what those were taken from, if you know, and how you know.

A. Taken from parts of attachments to the pump of "Eagle" No. 3, same one referred to in my last an-  
1571 swer. I know, because I assisted the photographer in arranging for the views.

Q. 8. Do you remember, some time last winter or spring, when some persons, said to represent the defendants in this case, came to your shops at Manchester to examine this engine, "Eagle" No. 3? If you do, state about the time, and who they were, if you knew.

A. I recollect of some parties being there. Mr. Nehemiah S. Bean and Mr. Luce, the young man. The other gentleman, I was afterwards informed, was  
1572 Mr. Hutchings. It was some time in the spring; I should think it was March or April. It was mud time.

Q. 9. Did you ever have conversation with anybody about selling that engine to defendants in this place?

A. I did.

Q. 10. With whom, if you remember?

A. Mr. Luce, senior (C. A.), in the first place; afterwards with Mr. N. S. Bean, and the young man Luce (Thomas D.).

1573 Q. 11. What did they say with reference to that, in short.

A. They had no authority to buy it, and thought defendants didn't want it.

Q. 12. Do you know by whom that engine was made, or said to have been made?

A. Said to have been made by the Amoskeag Manufacturing Company; and, judging from the name-plate, I should say it was so.

Q. 13. You would have sold it to defendants, if  
1574 they had wanted to purchase it, would you not, as a  
matter of business?

A. I should. It was on sale.

*Cross-Examination by C. WYLLYS BETTS, Esq., of  
Counsel for Defendants.*

× Q. 14. To whom did you sell the engine "Ea-  
gle" No. 3?

Objected to as assuming a fact not proved, and not  
in evidence.

1575 A. To Mr. Norton, complainant's counsel in this  
case.

× Q. 15. How much did he pay you for it?

A. Twelve hundred dollars.

*Direct Examination resumed.*

Q. 16. At the time that you sold this engine, "Ea-  
gle" No. 3, as stated in your last previous answers,  
what did Norton say to you, if any thing, of his object  
in desiring to purchase that engine?

1576 A. To prevent its being destroyed, and to give him  
an opportunity of having it photographed, or parts of  
it photographed, to be used in evidence. That is all I  
recollect.

SAMUEL C. FORSAITH.

Attest:

CHAS. C. CONANT,  
*Special Examiner.*

Complainant's counsel here offers to produce in evi-  
1577 dence, and he here offers in evidence, the rotary water-  
pump shown by the photographic views testified to by  
Mr. Forsaith, a witness to-day produced and examined  
on part of complainant. And complainant's counsel  
offers to produce, at the hearing, the originals from  
which these photographic views were taken, so that  
the court may see the rotary water-pump taken from  
"Eagle" engine No. 3, about which defendants'  
witnesses have all testified; and, more especially, to  
show to the court the pipe and "plug-cock" and its ar-

1578 rangement, called by complainant's witnesses a "*bypass*," for the purpose of passing water from the hydrant, to which such rotary-engine may be attached, and is attached, when working at a fire, by and beyond the rotary-pump, when not in motion, to and through the discharging hose upon a fire, solely and only by means of hydrant pressure, to which the same is attached.

Attest:

1579 . CHAS. C. CONANT,  
*Special Examiner.*

### DEPOSITION OF SUMNER B. QUINT.

*Direct Examination by* MARCUS P. NORTON, Esq., *of*  
*Counsel for Complainant.*

1580 BOSTON, August 13, 1879.

Q. 1. Please state your name, age, residence, and occupation.

A. Sumner D. Quint; forty-four; Manchester, N.H.; photographer.

Q. 2. About how long have you been in the business of a photographer in Manchester, N.H.?

A. Some fourteen or fifteen years.

Q. 3. Do you know Nehemiah S. Bean of Manchester, N.H.?

1581 A. I do.

Q. 4. Look at six photographic views, cabinet size, now shown to you, marked as exhibits in this cause, and state who made them, if you know, where, when, and from what.

A. I made them at Weeks's Block, Elm Street, Manchester, N.H., about the last of July last, from sections of a rotary water-pump of a steam fire-engine.

Q. 5. Do you know where the originals came from, from which you made those photographic views? And,  
1582 if yea, state the same.



A. Sent there by Mr. S. C. Forsaith of Manchester, N.H.

Q. 6. State whether Mr. S. C. Forsaith was present during the whole or part of the time you were making these photographic views.

A. He was not present at the time I made them, but told me what to make of them. He called in while I was making the last one, and advised as to making that one.

1583 Q. 7. So far as you know, the several parts from which you made those views appeared to be original ones, and also appeared as if they had been in use a considerable time, did they not?

A. Yes.

Q. 8. Are those parts still in your photographic gallery at Manchester, N.H.?

A. They are.

Q. 9. Each of these photographic views now before you fairly and correctly represent the originals which  
1584 you have referred to, do they not, and as the originals appeared on the day when you made these photographic views?

A. They do.

Q. 10. I now hand you six photographic views, card size, which are marked as exhibits in this case. State who made them, if you know, when, where, and what from.

A. I made them, I think, from the first to the middle of July last, at my photographic gallery in Man-  
1585 chester, from sections of a rotary water-pump steam fire-engine.

Q. 11. Who was present, if anybody, while you were making those photographic views?

A. Mr. Norton, the complainant's counsel, was present while I was making the negatives.

Q. 12. And he directed the plan or kind of views he wished you to make, did he not?

A. He did.

Q. 13. State whether these views were made from  
1586 parts of the same rotary water-pump of a steam fire-engine, from which you made the views represented by

the cabinet-sized photographs marked as exhibits in this cause, and which you have previously testified about.

A. They were.

Q. 14. Do these views fairly and correctly represent the original parts from which you made them at the time stated by you?

A. They do.

1587 Q. 15. Those originals are at this time in your photographic gallery in Manchester, N.H., are they not?

A. They are.

Q. 16. Do you know the name of the rotary water-pump steam fire-engine from which these views were made?

A. I do not.

Q. 17. Did you ever see that engine, so far as you knew it, in any of the shops or any of the premises, occupied by Messrs. S. C. Forsaith & Co., Manchester, N.H.?

A. I did, in his yard, sitting under a shed; and it was moved out of there for me to photograph.

Q. 18. You photographed some part of that engine previous to your making the twelve views you have testified about here to-day, did you not?

A. I did.

Q. 19. About how long previous, so far as you remember?

A. I think about fifteen or sixteen months.

1589 Q. 20. For whom did you make that photographic view?

A. I don't know exactly how to answer that question. Mr. Luce, the senior, came to me, and wished me to go down and make a view of the engine, stating that Mr. N. S. Bean would carry me down and take me back.

Q. 21. What did Mr. Luce say to you, if any thing, as to his purpose or object in having that photographic view made?

1590 A. Said he wanted the prints made to carry on to New York; that he and Mr. Straw were going on in a few days; that they were to be used in court in a case

of infringement of patent, — what was claimed as an infringement of patent, — something to that effect.

Q. 22. Do you mean, in your last answer, Mr. E. A. Straw, formerly agent of the Amoskeag Manufacturing Company at Manchester?

A. I do.

Q. 23. State whether he was at that time the agent  
1591 of that company, and transacting business as the agent for that company, so far as you have any knowledge about it.

A. He was.

Q. 24. Did Mr. Nehemiah S. Bean of Manchester, take you and your photographic apparatus and chemicals to Forsaith & Co.'s shop-yards to photograph the engine, as Luce had previously told you he would do?

A. He did.

Q. 25. Was Nehemiah S. Bean present at the time  
1592 you took these photographic views in the shop-yards of Forsaith & Co.?

A. He was.

Q. 26. State whether he directed the making of the photographic view which you did make on that occasion.

A. He did.

Q. 27. And you made just such a photographic view as he directed you to make on that occasion?

A. I did.

Q. 28. Who else was present on that occasion, if  
1593 you know? Give the names of any and all persons.

A. Mr. Luce the elder, and A. H. Lowell.

Q. 29. Anybody else?

A. Not that I recollect of.

Q. 30. Was Mr. Forsaith, or any of his partners in business, present on that occasion?

A. I don't remember that there were.

Q. 31. If you know, state who moved that engine out of the shed where it was housed, so that you could  
1594 make that photographic view of which you speak.

A. Laborers of Messrs. Forsaith & Co. moved it out.

Q. 32. And at whose request did they do that, if you know?

A. Mr. Bean's, I think, — I am not positive.

Q. 33. I now show to you a photographic view, on a very large-sized card. Please examine that, and, if you know, state who made it.

A. I made it.

1595 Q. 34. From what did you make that?

A. From the steam fire-engine in Mr. Forsaith's yard.

Q. 35. And that is the photographic view referred to by you which N. S. Bean took you to that engine to have made, is it?

A. It is.

Q. 36. This particular print that you now hold in your hand, when was that made?

A. Last of July or first of August the present year.

1596 Q. 37. And the negative from which you made this was made about when?

A. A year ago last February or the first of March.

Q. 38. State who paid you for making that, if anybody, if you know?

A. Mr. Luce paid me.

Q. 39. This Nehemiah S. Bean of which you have spoken was formerly in the employ, was he not, of the Amoskeag Manufacturing Company, Manchester, N.H.?

A. He was.

1597 Q. 40. And this Mr. Luce was also in the employ of that company at some previous time?

A. Well, I have heard that he was, but I never knew in what capacity.

Q. 41. Who, if anybody, paid you for making the six cabinet and the six card-sized views about which you have testified?

A. Mr. Marcus P. Norton paid me.

1598 Complainant's counsel requests the examiner to mark the extra size photographic view referred to by this witness, as "Complainant's Exhibit, Photographic view, No. 13, C. C. C., Special Examiner;" and the same is marked accordingly.

Q. 42. Was not Norton also present when some of those cabinet-sized photographic views were taken by you? and did he not request the making of one or two

of them after the negatives of the other four were made?

A. He was, and did.

1599

*No Cross-Examination.*

S. D. QUINT.

Attest:

CHAS. C. CONANT,  
*Special Examiner.*

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BOSTON, August 14, 1879.

Defendants' counsel offers to produce for cross-examination the witness, Nehemiah S. Bean, on Friday, August 15, on condition that complainant's counsel will stipulate upon the record to confine his questions to matters concerning which said Bean testified upon the day or days in March, 1879, when complainant's counsel was absent. Defendants' counsel makes this condition for the reason that he does not feel at liberty to subject the defendants to the expense of another long cross-examination of this witness; and, if complainant's counsel wishes to elicit from this witness any other information, he must call him as a witness for complainant.

1601

Attest:

CHAS. C. CONANT,  
*Special Examiner.*

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DEPOSITION OF THOMAS L. LIVERMORE.

1602

*Direct Examination by* MARCUS P. NORTON, Esq., *of Counsel for Complainant.*

BOSTON, August 14, 1879.

Q. 1. Please state your name, age, residence, and occupation.

A. Thomas L. Livermore ; thirty-five ; Manchester, N.H. ; agent of Amoskeag Manufacturing Company.

1603 Q. 2. You appear to-day to be examined as a witness under a subpoena issued and bearing date the eleventh day of August, 1879, do you not ?

A. Yes.

Q. 3. That subpoena asks you to produce certain books, letters and other papers having reference to three steam fire-engines, known as "The Arba Reade," "Hugh Rankin," and "J. C. Osgood," built by the Amoskeag Company, of which you are now agent, and sent by that company to Troy, N.Y., does it not ?

A. Yes.

1604 Q. 4. In obedience to that subpoena have you brought with you to be produced any book, letter, paper, or other document in your possession as agent of that company, and having to do with the manufacture or sale of those engines, or either of them ?

A. I have here all the books and papers of the kind inquired for, which my corresponding clerk found, as he told me, in compliance with my order to find and give to me all the books and papers called for by the subpoena. As I became agent of the Amoskeag Manufacturing Company last spring, I had no personal knowledge of their whereabouts, and said corresponding clerk, I believe, knew most about them of any one in my office.

1605 Q. 5. Do those books and papers, to which you refer in your last answer, contain matter having reference to other business of that company than the three steam fire-engines which I have named ?

A. Yes.

1606 Q. 6. Not desiring to inquire into any other matter than such as relates to those three engines, and if you have examined those books and papers sufficiently so that you can readily refer to such as the subpoena calls for, I ask you, if you have no objections, to show me the same.

A. I will show you such papers as my clerk, in whom I have confidence, marked as being called for by the subpoena, and in compliance with my orders.

Witness shows to complainant's counsel several original letters addressed to E. A. Straw, agent Amos-  
 1307 keag Manufacturing Company, and produces letter-  
 press books containing answers thereto; also other  
 letters and books.

Q. 7. Are you willing to leave these original letters  
 with this examiner, and also the other books last re-  
 ferred to in examiner's note above, so that he may copy  
 the same and the answers thereto in this case as evi-  
 dence in this cause, on condition that he shall so write  
 the same out in full on this record within a reasonable  
 time, at the expense of complainant, and thereafter  
 1608 return the originals, which you now have here, to your  
 office in Manchester, N.H.?

A. Yes.

Complainant's counsel offers in evidence each and  
 every of the letters and the answers thereto having  
 reference to the construction, manufacture, sale, and  
 delivery of the steam fire-engines named in the *sub-*  
*pœna duces tecum*, under which and by which the wit-  
 ness produces the same, as stated in his last answer.

Q. 8. I observe, among the books which you have  
 1609 produced, a book entitled as follows, on p. 1, so far as  
 it has any title: "Specification of a steam fire-engine  
 manufactured by the Amoskeag Manufacturing Com-  
 pany." I desire you to examine p. No. 12 of such  
 book, containing printed blanks of such specifications,  
 and read as your answer to this question the matter  
 there in print.

A. I read as requested. It is as follows:—

No. 12.

1610 Specification of a steam fire-engine, manufactured  
 by the Amoskeag Manufacturing Company for city of  
 Troy, N.Y.

Order given by

Number of boiler, 12.

Class, 1st.

General style, like

Weight, without fuel or water

Boiler to be covered with      with      dome, and  
 mouldings.

- 1611 Pump, plunger-pump, and single engine.  
 Air-chamber to be of  
 Wheels to be painted  
 tire inches wide; forward ones inches high; and  
 back ones inches high.  
 Signal  
 Brake  
 When to be delivered  
 Terms,  
 Sundries, Name, "Arba Reade."  
 1612 *No Cross-Examination.*

THOS. L. LIVERMORE.

Attest:

CHAS. C. CONANT,  
*Special Examiner.*

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**Subpoena to Thomas L. Livermore.**

1613

United States of America,

MASSACHUSETTS DISTRICT, SS.

[SEAL.]

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THE PRESIDENT OF THE UNITED STATES OF AMERICA, *To the Marshal of the District of New Hampshire, or either of his Deputies, Greeting.*

- 1614 You are hereby required to summon Thomas L. Livermore, agent of the Amoskeag Manufacturing Company, located at and doing business in the city of Manchester, in said District of New Hampshire, if he may be found in your district, to appear and attend before Charles C. Conant, a special examiner in the cause of Christopher C. Campbell, complainant, and assignee in trust, *v.* The Mayor, Aldermen, and Commonalty of the City of New York, defendants, now pending in the Circuit Court of the United States, in  
 1615 and for the Southern District of New York, and the



- second Circuit (said special examiner being duly appointed by said Circuit Court), on Thursday, the fourteenth day of August, A.D. 1879, at eleven o'clock, A.M., at the clerk's office of the United States Circuit Court, Massachusetts District, 140 Tremont Street, Boston, in said District of Massachusetts, then and there to testify and give evidence in the cause above stated, wherein the said Christopher C. Campbell is complainant, and assignee in trust, and the Mayor, Aldermen, and Commonalty of the City of New York are defendants, and which is now pending and undetermined in the Circuit Court of the United States for the Southern District of New York aforesaid, and in equity on the part of the said complainant; and direct the said Thomas L. Livermore to bring with him and produce before the said special examiner duly appointed by the Court, and at the time and place aforesaid, a certain contract or agreement dated on or about the fourteenth day of December, A.D. 1859, by and between
- 1617 E. A. Straw, agent of the said Amoskeag Manufacturing Company, and N. B. Starbuck and L. L. Southwick, a committee of "The Arba Reade" steam fire-engine company, of the city of Troy, N.Y.; also two certain other contracts or agreements between said agent, E. A. Straw, and said city of Troy, county of Rensselaer, and State of New York, for the manufacture and delivery by said Amoskeag Manufacturing Company of a certain steam fire-engine in the year 1860, in the month of October of that year, and known
- 1618 as "The Hugh Rankin," in the list or register of steam fire-engines published by said Amoskeag Company; also a certain other contract or agreement for the manufacture and delivery by said manufacturing company to said city of Troy of another steam fire-engine in the latter part of the year, A.D. 1861, known as "The J. C. Osgood," and delivered to said city of Troy by said Amoskeag Company in January, A.D. 1862; also all *letter-press books* used by said Amoskeag Manufacturing Company, and containing any letter or letters
- 1619 about or concerning said steam fire-engine, "Arba Reade," between said company and said committee, or

- anybody else; also containing any letter or letters of or about said steam fire-engines "Hugh Rankin" and "J. C. Osgood," in or during the years A.D. 1859, 1860, 1861, and 1862, between said Amoskeag Company, or E. A. Straw, agent, and said city of Troy, or a committee acting therefor, or any persons having to do with the contracting for and delivery of said engines, or either of them; also any and all memorandum
- 1620 or order book or books containing any order, contract, agreement, or memorandum of and about the construction, building, or delivery of said engines, or either of them, or of any alterations or changes thereof before or after the delivery of the same, or of either of them; also all letters or writings from said committee, or of any person or persons acting for or in behalf of the said city of Troy, about the construction and delivery of said engines, or either of them, or of any alterations in same, either before or after the delivery thereof to
- 1621 said committee, or city of Troy, or any one acting for same; also all letters received and letters sent to any one in or during those years of or concerning said steam fire-engines, or either of them; also all memorandums, agreements, or other papers of and concerning the said steam fire-engines, or either of them, in and during those years,—namely, 1859, 1860, 1861, and 1862,—and now in the possession or under the control of yourself, as agent of said company, or of said company, — namely, Amoskeag Manufacturing Com-
- 1622 pany, at said city of Manchester, N.H., — that in any way or manner have to do with, or relate to, the construction, sale, and delivery of said steam fire-engines, — namely, "Arba Reade," "Hugh Rankin," and "J. C. Osgood," — and any and all papers now in your custody, and all deeds, evidences, and writings which you have in your custody or power concerning the premises aforesaid; and warn the said witness, that, for default and non-appearance he will have to abide the pains and penalties of the law in that behalf made and
- 1623 provided.

Hereof fail not, and make due return of this writ with your doings thereon unto our said Court, as soon after the service thereof as may be.

**Witness**, the Honorable Morrison R. Waite, at Boston aforesaid, this eleventh day of August, in the year of our Lord one thousand eight hundred and seventy-nine.

JOHN G. STETSON,  
*Clerk.*

1624 Indorsed:

August 11, 1879. Service of the within subpoena is hereby accepted.

T. L. LIVERMORE.

The following are copies of the papers, &c., produced by the witness, Thomas L. Livermore, in answer to Q. 6 of his deposition, and put in evidence by complainant's counsel. These copies of papers, &c., are made from the originals by the examiner, by direction  
1625 of complainant's counsel, and under the permission given by the said witness in answer to Q. 7. Each copy is marked "Exhibit Livermore Copy," with a designating numeral 1, 2, 3, &c.

Attest:

CHAS. C. CONANT,  
*Special Examiner.*

1626

# EXHIBIT LIVERMORE COPY 1.

TROY, November 12, 1859.

MR. E. A. STRAW,  
*Agent Amoskeag Manuf. Co., Manchester, N.H.*

Sir, — Our citizens have determined to introduce steam for the extinguishment of fires (the proceedings of meeting is herewith enclosed). Messrs. Lee & Larned sent here, a short time since, one of their machines on exhibition, which performed admirably. As  
1627 one of the committee appointed to investigate wrote Messrs. Walworth & Co., Boston, in reference to the makers in their vicinity; from them received your circular. Have shown to several parties, who are much

pleased with the construction, and would like to arrange for the exhibition of one of your machines here. Can such arrangement be made? Will pay portion of the expense of transportation. Please inform if you have one nearly completed, capacity, construction of boiler, construction of pump, size cylinders, price, and all other desirable information. You will please give this immediate attention, as contract with some party will soon be made.

Yours respectfully,

L. L. SOUTHWICK.

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EXHIBIT LIVERMORE COPY 2.

1629

MANCHESTER, N.H., Nov. 15, 1859.

L. L. SOUTHWICK, Esq., *Troy, N.Y.*

*Dear Sir,* — I am in receipt of your favor of the 12th inst.

We have never built our steam fire-engines except to order, consequently we have none that we can send out for exhibition. Were it possible to do so, I should be very glad to exhibit one in your city, and would take immediate measures for it. Your committee can see one in Boston, and can see there at the same time engines of three other makers. The city of Manchester have also one of our engines in service here; and I should be very happy to meet yourself and the gentlemen of your committee here or in Boston.

All the engines we have built are of the same size and capacity, — weight a little short of seven thousand pounds, when ready to run to a fire, with tank and boiler full of water, tender and fire-box filled with fuel (enough to run the engine two hours), suction-hose, leading-hose pipes, &c., all included. Two horses will handle the whole with perfect ease.

The capacity of the engine will be shown by the following results of the playing of "The Eagle," the machine built for the city of Boston, and *made the first*

*time* she was played. From the time of starting the fire, in two minutes thirty seconds, had five pounds of steam; in three minutes, ten pounds steam; in three minutes, thirty seconds, fifteen pounds steam; in four  
 1632 minutes, twenty pounds steam; in four minutes, forty seconds, thirty pounds steam, and started with *two* one-inch streams of water; in five minutes had forty pounds of steam; in six minutes, sixty pounds of steam; in six minutes, thirty seconds, had seventy-five pounds of steam. Her playing was: One one and one-fourth inch stream, 215 feet horizontally; two one-inch streams, 195 feet horizontally; four seven-eighths inch streams, 150 feet horizontally; at the same time drawing her water from a reservoir.

1633 We warrant the engines in every particular of material and workmanship, and deliver them, in working order, to the satisfaction of the purchaser, with suction-hose, leading-hose pipes, and the necessary small tools for the use of the engine.

Our price is three thousand dollars, cash on the delivery, and after a satisfactory trial of the engine.

All the machines we have sold, with one exception, have brass rotary-pumps, which I believe to be the best pump for a fire-engine; but, if desired, we build them  
 1634 with double-acting plunger-pumps; weight, capacity, and price the same.

I believe no other particulars are important; but, if desired, shall be very glad to communicate further. You must examine our engine in connection with others before you can appreciate its merits; and, if you will take the trouble to do this, I shall reckon confidently upon the pleasure of meeting you and the gentlemen of your committee, and selling you an engine.

I remain yours truly,

1635

E. A. STRAW, *Agent*.

## EXHIBIT LIVERMORE COPY 3.

TROY, November 17, 1859.

MR. E. A. STRAW.

Sir, — Your favor of 15th is at hand. Your suggestion to meet the committee in Boston is a good one, and will probably make arrangements to comply, of which you shall have due notice. You state the weight at little less than seven thousand pounds. Your circular states fifty-five hundred. Is this discrepancy ac-  
 1636 counted for in one case ready for service and the other not? Please state the length of suction and leading hose furnished; also your opinion as to the adaptation of the cotton hose made by Boyd of Boston for this service; also the size of steam-cylinders, feed-pumps, and rotary-pump; also description of boiler (construction, giving sketch), fire surface, and quantity of water in boiler ready to start fire; also size of water-tank. Your account of the performance of "The Eagle" in distance of stream does not quite equal "The Amos-  
 1637 keag" as per circular. By giving this your early attention, will much oblige,

Yours respectfully,

L. L. SOUTHWICK.

P.S. — Please give the time required to build machine after receiving order.

## 1638 EXHIBIT LIVERMORE COPY 4.

NOVEMBER 19, 1859.

L. L. SOUTHWICK, ESQ., *Troy, N.Y.*

Dear Sir, — I am in receipt of your favor of the 17th inst.

The discrepancy you notice in the stated weights of the engines is the difference (about fifteen hundred pounds) between the engine *empty*, and the engine ready for service.

1639 We furnish with the engine twenty-eight feet of suction-hose, in two or more lengths, as required, and pipes for the leading hose, *but no hose*.

The steam-cylinders are each seven and three-fourths inches diameter and nine-inch stroke. The feed-pumps are each one and a half inch diameter and three-inch stroke. Each gear of the rotary-pump is nine-inch diameter, and eight-inch face; and the capacity of the pump is *over* five hundred gallons per minute.

1640 The boiler is an upright tubular, with enlarged fire-box and steam-chamber, and a submerged smoke-box. It contains two hundred tubes one and a half inch diameter. Its peculiar construction brings a nearly uniform amount of water in contact with every part of the fire-surface; and, as the top of the water is above the tubes, it gives a large evaporating-surface, thereby preventing foaming, &c. It has a grate-surface of eight square feet, a fire-surface of two hundred and ten square feet, carries six hundred pounds of water to start with, and the water-tank holds six hundred  
1641 pounds more.

In reference to the performance of "The Eagle," you should remember that it was the first time she was played. We think she will beat "The Amoskeag" after she has been worked a few times.

We should want two weeks, after receiving the order, to complete and deliver the engine.

As to Boyd's patent hose, I think very highly of it, and we are using it here very generally.

Hoping soon to have the pleasure of meeting you in  
1642 Boston, I remain,

Yours very truly,

E. A. STRAW.

#### EXHIBIT LIVERMORE COPY 5.

TROY, November 24, 1859.

MR. E. A. STRAW.

1643 Sir, — Your favor of 19th is at hand. Allow me to request a few more particulars, as follows: —

The width of wheel-track.

The width over all hubs or other projections.

The extreme length, including pole.

The extreme height from ground to top smoke-pipe.

The distance from centre smoke-pipe to back side of platform.

The diameter and length of smoke-pipe to back side of platform.

1644 The committee, and some others, had meeting last evening. Your machine has thus far made favorable impression. They will recommend to the general meeting this evening that a committee be appointed to meet you early next week in Boston (will definitely inform you of the day). The reason for asking the above questions is to get some idea of the size of steamers, that house may be built before the season closes. Your early attention will oblige,

Yours respectfully,

L. L. SOUTHWICK.

1645

#### EXHIBIT LIVERMORE COPY 6.

TROY, November 24, 1859.

MR. E. A. STRAW.

1646 *Sir*, — Agreeable to my letter of yesterday, herewith enclose proceedings of meeting held last evening. It is the present intention of the committee to leave here on Tuesday morning next, and will meet you at the Revere House, Boston, on Wednesday morning. Should any thing occur to prevent meeting you as above, will telegraph you at Manchester.

Yours respectfully,

L. L. SOUTHWICK.

#### EXHIBIT LIVERMORE COPY 7.

NOVEMBER 25, 1859.

1647 L. L. SOUTHWICK, Esq., *Troy, N.Y.*

*Dear Sir*, — I am in receipt of your favor of the 24th inst.



Our engines track about *five feet*, varying this several inches as desired. The Boston engine just suits their horse-railroad track.

The extreme width is, to the outside of the whiffle-trees, six feet six inches.

The extreme length, including the pole, is twenty feet six inches.

1648 The extreme height, from the ground to the top of the smoke-pipe, is ten feet.

The distance from the centre of the smoke-pipe to the back side of platform is four feet six inches.

The diameter of the smoke-pipe is fifteen inches; the length is three feet.

Room should be left in the rear of your engine, so as always to have a hose-carriage attached to it.

I shall be happy to meet you on any day you name in Boston.

1649

Yours very truly,

E. A. STRAW.

#### EXHIBIT LIVERMORE COPY 8.

NEW YORK, December 1, 1859.

MR. E. A. STRAW.

1650 Sir, — Messrs. Starbuck, Chapin, and myself, arrived here safe this morning, and are still in pursuit of information. We have this morning made partial examination of the Cary rotary-pump, and would request that you make drawing of the rotary-pump in use on steamer "Eagle," and forward to me at Troy as soon as possible. Please also state if you will put on the Cary pump if we should so desire.

Yours respectfully,

L. L. SOUTHWICK.

1651

## EXHIBIT LIVERMORE COPY 9.

DECEMBER 5, 1859.

L. L. SOUTHWICK, Esq., *Troy, N. Y.*

*Dear Sir,* — I am just in receipt of yours of December 1. Please find the sketch of the pump you request on the last page of this sheet.

I should have no objection to the use of "Cary's pump" if you preferred, and could obtain his consent; though I consider our pump much the best on account of its extreme simplicity. The use of "Cary's pump" would involve the use of an "air-chamber:" another objection.

We have an iron pump of our pattern that has been in use here in one of the mills as a fire-pump for more than sixteen years. This pump we tried a short time since, and found we could draw water by suction a vertical height of twenty feet, and be seen every time.

1653 This fact has satisfied me that the pumps will not wear out *very* rapidly in ordinary service.

My regards to yourself and Messrs. Starbuck and Chapin.

Yours very truly,

E. A. STRAW.

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## EXHIBIT LIVERMORE COPY 10.

1654

DECEMBER 7, 1859.

L. L. SOUTHWICK, Esq., *Troy, N. Y.*

*Dear Sir,* — I am in receipt of yours of the 5th inst.

First, let me say that we claim that our engine with the rotary-pump is *sure*, with its suction, *a distance of twenty feet*. This we have tried repeatedly, and can guarantee to that effect.

Our plunger-engine has precisely the same general appearance with the rotary. It has two steam cylinders, and two double-acting pumps working vertically.

1655 Steam cylinders are eight-inch diameter, twelve-inch

stroke each. Pump do., four and one-half inch diameter, twelve-inch stroke. Suction attached on either side; four gates for attaching leading-hose; two feed-pumps: in short, with all the general characteristics of our other engine, with the substitution of *two* double-acting plunger-pumps for the rotary. The boiler tank, and running-gear precisely the same.

I am fully aware of the prejudice against the rotary-pump, for ten years ago I had it as strong as any other  
 1656 person: but the experience we have had with these and the plunger-pumps for fire purposes, working them side by side, has led me to favor the rotary; and I think such is now the preference of most of insurance agents in New England.

I will send you, in a few days, a photographed sketch of our plunger-engine. I have now none on hand.

Yours very truly,

E. A. STRAW.

1657

# EXHIBIT LIVERMORE COPY 11.

DECEMBER 30, 1859.

L. L. SOUTHWICK, Esq., *Troy, N. Y.*

*Dear Sir,* — Yours of the 28th inst. is at hand.

The running-gear of your engine will be made of white oak, and oiled and varnished, — the same as  
 1658 "The Eagle," which you saw in Boston.

I know you will like Boyd's patent hose, and am glad to learn you are to try it. That hose, and the seven-ply rubber, are the only kinds we have yet found that will stand well *at the trials* of our steamers, when it is subjected to a pressure of two hundred to two hundred and twenty pounds to the square inch.

We are making good progress with your engine, and shall be sure to deliver it to you before the 1st of March. As soon as possible I will name the precise  
 1659 date. Is not your engine-house so high as to allow of the chimney being permanently attached to the top

of the boiler, instead of being hinged so as to drop over the side? If your engine-house is high enough, it will be much better to make the chimney a fixture.

Yours very truly,

E. A. STRAW.

P. S. The point for attaching your hose-carriage will be eighteen inches from the ground.

1660

E. A. S.

### EXHIBIT LIVERMORE COPY 12.

TROY, February 17, 1860.

MR. E. A. STRAW.

*Sir*,—Your favor of 14th ult. is at hand. There is a growing feeling among our citizens to disband our present department and substitute steam. To foster  
1661 this feeling it is proposed, that, at the time of the trial of your machine ("Reade"), there shall be others here, and have exhibition of the power of machines of different builders. Have reason to expect machines from Lee & Larned, Reany & Neaffie, and Silsbee, Mynders, & Co., and have concluded to name Thursday, March 15, 1860, as the day for exhibition, if this will be agreeable to you. On the receipt of your answer will duly notify the other parties. Think, if  
1662 your *ponies*. An early answer will oblige,

Yours respectfully,

L. L. SOUTHWICK.

### EXHIBIT LIVERMORE COPY 13.

FEBRUARY 18, 1860.

MR. L. L. SOUTHWICK.

*Dear Sir*,—I am in receipt of yours of the 17th  
1663 inst. relating to the trial of steamers at your place.

Nothing will suit us better than the trial you propose, provided the several parties can be induced to bring their engines into Troy.

Permit me, however, to suggest that you have named too early a day, first, on account of the weather, which is likely at that season of the year to be very bad for such trial as will be required. Next, it will be hardly fair to put a new machine, that has been but barely started, against machines that have been worked sufficiently to be in just the best condition for service. Again, our small engine, which I shall be glad to send up for trial, will not be completed so soon as the 15th of March.

If the trial can be fixed say about the 10th of April, it would seem to me to be much better for all parties. "The Arba Reade" will be finished, I think, the first week in March; but she ought to be worked eight or ten times before she will be in the *best* condition to run. The boiler for the first few times firing will always foam more or less. I wish, of course, to take all reasonable precautions to prevent our engine from coming off second best; so fix your time anywhere after the 10th of April, and we will endeavor to be with you in proper shape.

Yours very truly,

E. A. STRAW.

#### EXHIBIT LIVERMORE COPY 14.

1666

#### "EXCELSIOR."

HOUSE "EAGLE ENGINE CO., No. X."

TROY, February 20, 1860.

E. A. STRAW, Esq., *Agent, Manchester, N.H.*

*Dear Sir,*— You have no doubt been somewhat posted by friends in "Arba Reade Co. No. 1" of a movement in our company, and by citizens resident up town, to provide us with a "steamer." Having more information regarding your build, &c., than others, we have not written you as to similar establishments, or have we pressed our claims, because it would interfere very "materially" with our down-town brethren, who will, we believe, acknowledge the fact and the justice

1667

in our course towards them. Our company was the first in our city to come out for a "steamer for extinguishing fires." The early date this movement started found us but very few friends. Now how changed is public sentiment! Our company is made up with many mechanics, and know the value of steam over  
 1668 hand power. Composed as we are, we have every reason to believe that, by attention on our part, we can operate a steamer *cheaper*, and to better advantage, than any company in our department. We wish to procure a light, substantial, "hand"-running steamer, with large wheels, and, when supplied with fuel and water (with a water-tank), to weigh from 3,800 to 4,000 pounds, with upright "piston-pump," capable of discharging through three hundred feet hose, four-fourths inch nozzle, single stream, one hundred and  
 1669 eighty feet; and through same lengths hose, three-fourths inch nozzle, two streams, one hundred and thirty feet each. We desire an arrangement whereby the engine can work from "suction" or "hydrant," by means of "hydrant attachment," without unshipping one or the other, — say by means of a gate, or cock, fitted air tight. An engine of [this] character we can use in any part of our city, and to good advantage in any position, with little changing. A plain, simple piece of machinery of this nature, "ever ready," and a  
 1670 quick generator of steam, provided with lanterns, tools, &c., is our view of a steam fire-engine.

What say you? Can you furnish one of this character? and at what cost? and the time necessary to build the same?

The time has come which requires action, and to the work in good earnest. In two weeks we have our charter election for city officers, and from these officers we expect aid, &c.

Any information you may please to communicate  
 1671 will be duly acknowledged, &c.

Yours respectfully, in haste,

SAMUEL K. BRIGGS.

## EXHIBIT LIVERMORE COPY 15.

TROY, February 21, 1860.

MR. E. A. STRAW.

1672 *Sir*, — Your favor, 18th, is at hand. You will please do me the favor to order the maker to send stock and die, two and a half inches, by express, and invoice by mail, and will remit. Your suggestion with regard to trial taking place some time during April I think is a good one. Will see others during the present week, and when we meet at Manchester can definitely determine. Have this day ordered Mr. Bliss to send you two hose-attachments for machine, with female thread at one end; the other, his male piece. You had best 1673 *stir* Mr. Bliss up, and not be delayed by his neglecting to send suction couplings.

Yours respectfully,

L. L. SOUTHWICK.

## EXHIBIT LIVERMORE COPY 16.

FEBRUARY 29, 1860.

SAMUEL K. BRIGGS, Esq., *Troy, N.Y.*

1674 *Dear Sir*, — Yours of the 20th inst. was duly received, but my absence has prevented an earlier reply.

I think we can build such a steam fire-engine as you describe. In fact, we are now building one that will be very near, *if not exactly*, the thing that you want. I estimate its weight at four thousand pounds. It is a vertical engine with piston-pump of a capacity to throw three hundred gallons per minute; will throw *one* stream *over* two hundred feet, and *two* streams a hundred and fifty feet each. This engine we hope to have 1675 completed in about four weeks. It is building for the city of Boston. But we could finish you one of a similar description in from eight to ten weeks from the date of your order, should you see fit to give it to us.

Our price for such an engine, with its fittings, is twenty-five hundred dollars.

The city of Manchester have a *double* engine of this description; i.e., with two cylinders and two pumps attached to the same boiler, and we think here that she is the best working engine ever exhibited. I hope to  
 1676 show her to-day to some of your friends of "The Arba Reade," and should be very glad to see you and any of your friends here, when we would show you specimens of the several kinds of fire-engines that we build.

Yours very truly,

E. A. STRAW.

EXHIBIT LIVERMORE COPY 17.

TROY, March 6, 1860.

1677 MR. E. A. STRAW.

*Dear Sir,*—I would like to hear from you regarding your steam fire-engines, as to the weight (lightest), dimensions, capacity, price, and any information in regard to them.

An early answer would oblige me, so as to lay the facts before a committee appointed to inquire into the merits of the different steamers.

Yours respectfully,

E. T. LANDON, *Troy, N. Y.*

1678

EXHIBIT LIVERMORE COPY 18.

TROY, March 8, 1860.

MR. E. A. STRAW.

*Sir,*—On my arrival home, wrote Mr. Bliss in regard to his delay in executing orders, and urged upon him the necessity of furnishing the articles required for the steamer. Since my return, have been very often  
 1679 asked when the steamer would arrive. Have invariably named the 15th prox., as talked of at Manchester. Shall that be the day? Has Mr. Boyd sent the hose to you for trial? This was the arrangement between him and myself.

Yours respectfully,

L. L. SOUTHWICK.



## EXHIBIT LIVERMORE COPY 19.

MARCH 10, 1860.

1680 L. L. SOUTHWICK, Esq., *Troy, N.Y.*

*Dear Sir,* — I am in receipt of yours of the 8th inst.

I think you may look for "The Arba Reade" before the last of next week, if we can get the varnish dry enough so that it will do to ship. She is now receiving her second coat of paint, and the covering for the boiler. You can say to Mr. Barton that she will show brass-work enough to suit him. I thought he was a little afraid she would not be showy enough.

1681 We have received all the work from Mr. Bliss, and I am advised by Mr. Boyd that his hose is on the way to us; and I can see nothing that should cause any material delay in your receipt of the engine.

Yours very truly,

E. A. STRAW.

## EXHIBIT LIVERMORE COPY 20.

1682

TROY, March 12, 1860.

MR. E. A. STRAW.

*Sir,* — Herewith enclosed please find communication addressed to the committee: have replied to the main features, and promised a detailed account of the *pony* which you are building. Will you please reply to the following? —

Weight, with every thing ready for service.

Weight, without fuel or water.

1683 Size of boiler, diameter, and height.

Capacity of boiler, heating surface.

Stroke and diameter of pump and steam-cylinder.

Diameter of wheels, width tire, track.

Extreme length, width, and height over all.

Size and length of suction-hose.

Number of suction and discharge outlets.

Number of gallons discharged per minute.

Price, delivered in Troy, to prove satisfactory to purchasers.

1684

Yours respectfully,

L. L. SOUTHWICK.

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EXHIBIT LIVERMORE COPY 21.

TROY, March 18, 1860.

MR. E. A. STRAW.

*Sir*,—Your favor of 10th came to hand this morning, and has been perused by several of the interested, and in every instance given entire satisfaction. Mr. Barton says that there will probably [be] brass-work enough; or at all events, if she throws fire, as the one he saw at Manchester, there will be little time to examine brass-work. There has been here an agent of Lee & Larned, who is anxious to have a trial of the several machines, and wishes to be counted in. We have about concluded to have a trial April 25th. Can you be on hand with a rotary and the *pony*? Have agreed to give Lee & Larned two weeks' notice; and if the time, as above, will suit you, will write Reany & Neaffie, and Silsbee, Mynders, & Co. The communication alluded to yesterday I find here; therefore herewith enclose. Some of our people are disappointed that you do not mention trial of the "Reade," giving some account. It being the month of March, they naturally expect some wind. Perhaps L. & L.'s agent will supply the deficit.

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L. L. SOUTHWICK.

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EXHIBIT LIVERMORE COPY 22.

MARCH 14, 1860.

L. L. SOUTHWICK, Esq., *Troy, N. Y.*

*Dear Sir*,—I have yours of the 12th inst. Our small engine *we calculate* will, when all ready for service, weigh about 5,600 pounds. Empty, the weight will

not be far from 4,000 pounds. The boiler is thirty-four inch diameter, and five feet high, and has about  
 1688 one hundred ninety square feet of heating surface.

The pump is four and three-fourths inch diameter by twelve-inch stroke; steam-cylinder, eight inch diameter; rear wheels, five feet diameter; forward wheels, four feet diameter, and turn under the same as on our other engines; suction-hose, four and one-quarter inch diameter, twenty-four feet in length. One outlet for the suction-hose; two outlets for the leading hose; each with gates. The pump will throw three hundred gallons per minute. The extreme length of the engine,  
 1689 if to be drawn by hand, will be about sixteen feet from end of tender to end of tongue. From floor to top of chimney, from nine and one-half to ten feet, as desired. Our price will be \$2,500 for the machine, delivered in Troy, and warranted satisfactory.

I am off this morning for New York; so please excuse this hastily-written letter.

We have had a trial of "The Arba Reade," and the "boys" think that she throws a better stream than the engine which you saw work here. She is certainly  
 1690 the steadiest-working engine that I have ever seen work. She has even less vibration than the rotary. I have no doubt but that you will be pleased with her. Do not let your Troy people do any thing that looks to the purchase of another engine until they have seen her play. She is very nearly ready to send to you.

Yours very truly,

E. A. STRAW.

1691

#### EXHIBIT LIVERMORE COPY 23.

MARCH 14, 1860.

E. T. LANDON, Esq., *Troy, N.Y.*

*Dear Sir,* — Absence has prevented an earlier reply to yours of the 6th inst.

Our lightest steam fire-engine weighs about four thousand pounds empty, and about five thousand six hundred pounds when ready to work at a fire.

1692 The boiler is thirty-four inch diameter, and five feet high, and has about one hundred and ninety square feet of heating surface.

The pump is four and three-fourths inch diameter, twelve-inch stroke, and the steam cylinder eight inch diameter.

The rear wheels are five feet diameter, the forward wheels four feet diameter, and turn under the tank in the same manner as upon our other machines. The wheels' track about four feet eight inches wide. The

1693 engine has two outlets for leading hose, one for suction-hose. Suction-hose is four and one-fourth inch diameter, and we furnish twenty-four feet. The pump will discharge three hundred gallons per minute, and throw a stream as high or as far as any other engine. The extreme length of a *hand-engine*, sixteen feet; the height, from floor to top of chimney, nine and a half feet. Our price is \$2,500 for the engine, warranted to be complete and satisfactory in every particular. We shall be able to show you a specimen of our machines

1694 in "The Arba Reade" next week, and hope your committee will defer any action until you see her.

Yours in haste,

E. A. STRAW.

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EXHIBIT LIVERMORE COPY 24.

MARCH 19, 1860.

1695 L. L. SOUTHWICK, Esq., *Troy, N.Y.*

On my return from New York City, I find yours of the 13th inst.

Our painter is still at work upon "The Arba Reade." He promises that she shall be out of his hands to-day; and I think she will be dry enough to ship on Wednesday, or Thursday at the latest.

I cannot be sure to have the "pony" engine done as early as the 25th of April. I only received the boiler-iron last week, — ordered ten weeks since; and machine-shops, you know, are proverbially slow. So fix

1696

your time as late as you can consistently, and we will do the best we can. If the "pony" should not be ready, we would at any rate have a rotary on the ground. But I now think that "The Atba Reade" will be as good a representation as we can wish for.

I have just answered a telegram from Mr. Barton. Don't be too impatient.

Yours very truly,

E. A. STRAW.

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EXHIBIT LIVERMORE COPY 25.

TROY, March 20, 1860.

MR. E. A. STRAW.

*Sir*, — This day received from Engineer Bird request that the steamer might be detained at Boston for exhibition for people of Roxbury and Cambridge. Have consented to the arrangement, provided it meets your approval. Please have the detention as little as may be necessary to give a fair and satisfactory trial. Will you please give me the plan of organization and items of pay of your steam-department at Manchester? The cost *per annum*, I think you stated, \$1,000; the items have forgotten. Have seen some of volunteers in reference to the pony, and think have made favorable impression. They have letter from party in Portland, proposing to build machine for \$2,000, on some new plan, pump without valves. (Have not seen the letter.)  
1699 Have you heard of such machine? Please notify of time of steamer leaving Boston, and by which road.

L. L. SOUTHWICK.

EXHIBIT LIVERMORE COPY 26.

TROY, March 20, 1860.

GEO. W. BIRD, *Chief Engineer*.

*Sir*, — Your favor of 17th inst. is at hand. In reply, would say that I have seen Mr. Starbuck, and that it will afford us pleasure to consent to the arrangement you propose in regard to exhibition at your city.

1700

Would request that you have a full and satisfactory trial, and send me a detailed account of the same in your official capacity; also give the time of leaving your city, and when it will arrive here. The consent above is of course subject to the approval of Mr. Straw. Will you please see Mr. Boyd, and request the pipe and cap to be forwarded with machine? Also request  
 1701 that the city order for hose be expedited as much as possible.

Yours respectfully,  
 (Signed) L. L. SOUTHWICK.

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#### EXHIBIT LIVERMORE COPY 27.

TROY, March 21, 1860.

MR. E. A. STRAW.

1702 *Sir*, — Your favor of 19th ult. is at hand. In reference to the long-talked-of exhibition of machines, the prospect at present is that there will be some arrangement made by which it will be gotten up under the direction of our County Agricultural Society, and, in that event, may be deferred two or three months. Will keep you informed. All feel gratified that your opinion of the "Reade" is such that you consider a fit representative of your interests.

Yours respectfully,  
 1703 L. L. SOUTHWICK.

P. S. — We trust that another week's stock of patience will be all that is requisite.

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#### EXHIBIT LIVERMORE COPY 28.

ENGINEER'S OFFICE, FIRE DEPARTMENT,  
 BOSTON, March 21, 1860.

1704 E. A. STRAW, Esq.

*Dear Sir*, — Enclosed you will find copy of letter received from Troy, which I think fully explains itself.

If you will give me the time when you will be in this city with the engine, I will make full arrangements for her trial, and invite the government to be present.

I learn by the papers that the committee from Charlestown have full power to purchase a steam fire-engine, and perhaps this may please: at least, now is the time; for that there are to be five new ones, located  
1705 within a radius of four miles of this office, appears to be decided, and you may take your chance.

Yours respectfully,

GEO. W. BIRD.

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EXHIBIT LIVERMORE COPY 29.

MARCH 26, 1860.

1706 L. L. SOUTHWICK, Esq., *Troy, N.Y.*

*Dear Sir,* — Absence from home has prevented my earlier attention to your favors of the 20th and 21st inst. Before you receive this you will probably have received "The Arba Reade," and you will have the accounts of the trials made in Charlestown and Cambridge on Saturday. Her working was entirely satisfactory to us all; but I suppose, ere this, you will have got Mr. Starbuck's "first impressions," as he happened on the ground. She goes to Troy on the freight-train  
1707 from Boston to-day.

Our steamers are manned with fourteen men, all told; viz., foreman; assistant ditto, who is clerk; engineer; assistant ditto; fireman; driver; and eight hosemen. A pair of horses are kept always ready in the stable attached to the engine-house; and the driver is constantly on hand, and takes the care of the horses and of the engine. His duty is, in case of an alarm of fire, to light the fire under the boiler, hitch up his horses, and drive out the engine as quickly as possible.  
1708 The other members of the company go to his assistance at the engine-house if they are nearest that, or directly to the fire, as desirable. The cost of maintaining this company is as follows; viz, —

	Per annum.	
Foreman . . . . .	\$30	} 14 men and 2 horses.
Clerk and assistant foreman . . . . .	25	
Engineer . . . . .	50	
Assistant ditto . . . . .	25	
Driver . . . . .	365	
Keep of 1 pair horses . . . . .	275	
Fuel, oil, and gas . . . . .	61	
Eight hosemen, \$18 each . . . . .	144	
Fireman . . . . .	25	
Total cost per annum . . . . .	\$1,000	

This is the same as we allow for the cost of maintaining one of our hand-engine companies of forty-five men.

The offer for a steamer from Portland, to which you refer, comes, I suppose, from a Mr. Johnson, who built a machine a year ago or so in Boston that was called "The Antelope," and which I saw work once in Boston, and thought it worked well. The machine, however, has never found a purchaser, and is now on sale at East Boston. His pump is a double-acting plunger, with ports at the ends. These ports, instead of being covered by valves, are opened and shut by the moving of the pump-barrel, which is operated by an eccentric.

Capt. Bird, Col. Boyd, and myself think of coming to Troy, so as to be there on Thursday to see "The Arba Reade" on her first trial at home.

Yours very truly,

E. A. STRAW.

#### EXHIBIT LIVERMORE COPY 30.

TROY, March 31, 1860.

MR. E. A. STRAW.

Sir, — Your favor of 26th ult. is at hand. From its contents anticipated the pleasure of a visit from you and others, and were really much disappointed, as it was looked forward to as an opportunity of returning some of the many obligations to you. You have probably ere this received the papers sent you; and



as Mr. Bean returns this afternoon, he will give you full account of the mishaps. There was a difficulty in keeping steam, — the newspapers assert to the contrary, — both yesterday at Albany, and the day before here. This, Mr. Bean says, is owing to the size of exhaust-nozzle. When in perfect order again, Batchelder will make the change, and will have another test. Hoping that all may prove satisfactory, remain,

Yours respectfully,

L. L. SOUTHWICK.

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EXHIBIT LIVERMORE COPY 31.

APRIL 2, 1860.

1714 L. L. SOUTHWICK, Esq., *Troy. N. Y.*

*Dear Sir,* — I received your telegram Saturday afternoon, and sent the rubber valves by express on the next train of cars. These valves are precisely like the first ones; but you will receive, about Wednesday or Thursday, from the manufacturers in Boston, another set. Mr. Bean, on his return from Troy, went directly to the works in Boston; and Mr. McBurney, — the “rubber man” as we call him, — he says, “The fault was in the construction of the valve, and the set which he will make and send you *will be five times as strong as the others.*” *We know* that these valves can be made to operate well; as there is a set in “The Lawrence,” — Mr. Bean’s first engine, — that has been in use about two years, and were, when examined a short time since, found to be just as good as new.

I was very sorry to be prevented from seeing your reception and trials of the steamer, but shall take an early opportunity of visiting your goodly city.

I am just this moment in receipt of the newspapers and your letter of the 31st ult. Will you do me the favor of sending me five or six of each of the papers, “Whig” or “Arena,” which have notice of the trial? I wish to send them to some of the parties who are interested in the working of the steamers.

As to the capacity of the boiler to keep up steam when running, I can have no doubt. The first time the engine was tried I thought she made steam faster than there was any need for, and requested Mr. Bean to change the "exhaust-tip" for a larger one, which I  
 1717 suppose he had on at your trial.

Hoping you will receive your valves before you have a call to use the steamer, I remain

Yours very truly,

E. A. STRAW.

EXHIBIT LIVERMORE COPY 32.

1718 MR. E. A. STRAW. TROY, April 4, 1860.

*Sir*, — Your favor of 2d is this day at hand. Received this morning per express set of valves for pump, which, by express-label, left Boston 2d ult. Suppose these to be the set sent by you, and not the *five times as strong* set. Have, however, this day put them in, judging that new lungs were better than imperfect old ones. Among those taken out were some comparatively perfect, while others were most cut through, and had the  
 1719 appearance of cold shut-in castings. It is a great disappointment that Mr. Batchelder should leave, as, from the conversation with you at Manchester, was led to suppose that the person sent with machine would be willing to remain for one month. Shall have the machine tried this afternoon to see that valves are right, and, if on examination prove perfect, intend putting at suction to-morrow morning, and run one, two, three, four, five, six, or more hours to be thoroughly satisfied that she will make and keep steam for such jobs as we  
 1720 occasionally have, say lumber-fires, which do not always conform to the ten-hour system. Have ordered the Button nozzles, and will forward when received. Will send papers if can find. The edition at the offices has run out.

L. L. SOUTHWICK.

## EXHIBIT LIVERMORE COPY 33.

TROY, April 7, 1860.

1721 MR. E. A. STRAW.

*Sir*, — Have this day forwarded you by express the Button nozzles ordered by your favor of 2d. Invoice herewith enclosed; amount, \$14.10. Previous to receipt of this you have probably seen Mr. Batchelder (who left here yesterday afternoon), and he has given you the "Log of the steamer 'Reade'" April 5th (I notice by copy that it was dated 6th). I think you will be satisfied that the committee have kept their promise to give the *animal* a thorough trial. There are some fears with regard to leakage about bolts that secure axles to fire-box: one or more have leaked some. Mr. Batchelder will explain. The main steam-valve (two in globe) needs grinding. Noticed when valve-rod packing required renewing at trial that steam would not entirely shut off. The Albany exhibition should be done over.

Yours respectfully,

L. L. SOUTHWICK.

1723

## EXHIBIT LIVERMORE COPY 34.

TROY, April 14, 1860.

MR. E. A. STRAW.

*Sir*, — On the 7th ult. wrote you in reference to the steamer "Reade." The "Reade" has been out once since last set of valves were put in, only worked about fifteen minutes pumping up boilers of propeller. 1724 Regret to inform you that the leakages in boiler get no better *very fast*, being a constant dropping while standing in house. Would suggest that you send Mr. Bean, or some other competent person, to make all right.

Yours respectfully,

L. L. SOUTHWICK.

## EXHIBIT LIVERMORE COPY 35.

TROY, April 16, 1860.

1725 MR. E. A. STRAW.

*Sir*, — This morning sent you three copies of the "Whig," which will give you some idea of the doings of the steamer "Reade." We found difficulty in procuring fuel yesterday morning, which has led to the inquiry if Lackawanna coal cannot be used to advantage. Have you had experience; if so, please give. The Ohio coal (bituminous), which have used, forms clinker on grate and destroys draughts. Have anticipated the pleasure of a visit from you before this:

1726 do you intend coming? Would suggest that if you have to spare, that you send lithographs of "Amoskeag," "Eagle," and locomotives, to help to furnish room.

Yours respectfully,

L. L. SOUTHWICK.

P. S. Have been informed that one of your machines was tried at Portland with one made there: if so, please give result.

1727

## EXHIBIT LIVERMORE COPY 36.

APRIL 16, 1860.

L. L. SOUTHWICK, Esq., *Troy, N. Y.*

*Dear Sir*, — I am in receipt of your favor of the 14th inst. We are having a set of valves made with a brass plate inside of the rubber, which we shall send to you in a few days for use, in case the one you have now in the pump should fail.

1728 In regard to the leak of the boiler, if I am right, it is in consequence of the bolts that hold the axles to the boiler not having been riveted up where they protrude inside of the boiler. If such is the case, and I have no doubt it is, by dropping the grate, the engineer, with a light hammer, can make them perfectly tight in half an hour. If you or Mr. Starbuck will

examine the matter, and, if such is the difficulty, see that it is cured, you will very much oblige me. If the difficulty arises from any other cause, or is more serious  
 1729 than I suppose, we will send a person up to do the work at once.

If you want to go down to Albany again, Mr. Bean and myself would try to make the visit with you. I hope you are having the success you all deserve in your enterprise.

Yours very truly,

E. A. STRAW.

EXHIBIT LIVERMORE COPY 37.

1780

APRIL 23, 1860.

L. L. SOUTHWICK, Esq., *Troy, N. Y.*

*Dear Sir,*—Yours of the 16th came duly to hand. In regard to the use of Lackawanna coal for the boiler of your steamer, we have no experience; but I should doubt its working satisfactorily. The best fuel we can find is "English cannel coal," and that our city now supplies to their engines. We have found some varieties of Cumberland to work well, but it is more apt to  
 1781 melt and clinker. In Boston they use "Scotch cannel," which is very good, but not so uniform in quality or so free in burning as the "English cannel."

I intend to visit you some night this week, and will bring with me the lithograph you request.

Yours very truly,

E. A. STRAW.

EXHIBIT LIVERMORE COPY 38.

1732

TROY, April 23, 1860.

MR. E. A. STRAW,

*Agent Amoskeag Manufacturing Company.*

*Dear Sir,*—"The Arba Reade" has done well on several occasions since its arrival, and, having noticed its working, thought I would ask a few questions. Would it not work better with a valve with less laps,

- thereby allowing the admission of steam until the piston gets nearer the end of its stroke, and not giving the exhaust a lead of the steam, thereby requiring less
- 1733 force to be used by the momentum of the balance-wheel to carry past centres? I notice at times when working it will stop running, and generally at or about a half-quarter. At a fire Saturday evening the "Reade" worked from hydrant, through six hundred and fifty feet hose, through one and three-eighths inch nozzle, on to the fire. She appeared to labor harder than any time before; and the link and shaft got very hot, so that we stopped the engine two or three times. I should think there was too much slack-motion in link-
- 1734 boxes and shaft. I regret your engineer could not have remained longer with us, as his previous experience with steamers would have enabled him to apply quick remedies to slight ailings. I thought some of making a new valve and a new eccentric to put on steamer, and see what the effect would be. It seems to me the less labor the crank-shaft, link, and boxes have to perform the better. Sometimes we have to run the engine fast to keep it in motion, when a less speed would give us water enough. We are about putting
- 1735 in another blow-off fix, on opposite side from the one now in; and also think of putting in two on forward side of fire-box, to more effectually free the water-leg around fire-box from sediment. After having up steam and working the engine at fires and otherwise, we blow off the water and fill up at engine-house. We feel great care must be taken that the leg does not fill with sediment, also the space between lower ends of flues. We are very anxious that the steamer shall at all times be in readiness, and not prove a lame duck when there
- 1736 is work to do. As in all other cities where steamers have been introduced, there is here some opposition to them; and any failure to be ready or continue working when in service would be a heap of glory for the vagabonds who cry bad luck to it. We have burst three lengths of Boyd's hose at a pressure considerably within the amount we supposed it able to stand.

Respectfully yours,

N. B. STARBUCK.

1737

## EXHIBIT LIVERMORE COPY 39.

APRIL 26, 1860.

N. B. STARBUCK, Esq., *Troy, N. Y.*

*Dear Sir,* — I am in receipt of your favor of the 23d inst., and note your inquiries and suggestions.

I enclose a sketch of the valve and steam-ports of "The Arba Reade;" and, upon examination, I am inclined to think you are right in your view that the exhaust has too much the lead of the steam, and it may  
 1738 be that the engine would work better if the steam was worked nearer the full stroke. We have sent to your address a casting for a valve, with the exhaust port filled up as shown by the red lines in the sketch, so that you can place it to suit your own ideas. Please let me know the result. If you think it important to your success with the engine, I will send up an engineer to stay a week or ten days with you. I intended to have been in Troy myself one day this week; but have been a little unwell for several days, so much so  
 1739 as to prevent my leaving home. I shall be up in a very few days, and I will try and bring Mr. Bean with me.

In regard to the filling-up of the boiler with sediment: I at first had some fears on that score; but a recent examination of the boiler of "The Lawrence" in Boston, which has now been in use two years, and of "The Amoskeag" in this city, which has been in use about one year, has satisfied me; still I am a believer in all sorts of precautions.

1740 I feel that "The Arba Reade" has got into good hands; and it seems to me that you have been very successful with her, as far as I am able to judge. I understand quite well the sort of opposition you have got to overcome, as we have been through it here.

I think there is no doubt, from my experience with Boyd's hose, that much of it has been injured in the process of putting on the rubber. There seems to be no other way of accounting for the great difference in the strength of different pieces. He tells me that he

1741 thinks he has got over the trouble, and he now tests every piece before he sends it off.

Hoping soon to have the pleasure of seeing you, I remain,

Yours very truly,

E. A. STRAW.

EXHIBIT LIVERMORE COPY 40.

TROY, May 11, 1860.

MR. E. A. STRAW.

1742 *Sir*,—By your favor of 16th ult. was informed that you were having set of valves with plates for the "Reade." These have not been received. Those that we have in, *five times as strong*, are no good. Have tried a variety of styles,—*lignum vitæ*, same with leather facing, thickness of leather secured with copper rivets. The latter stands better than others. You may not be aware of the fact, though it can be proved, that the "Reade" is awful machine. The steam-valve sent Starbuck to fit up was put in yesterday, and the  
1743 animal tried under the superintendence of Mr. S. (I was absent from home), who expresses himself perfectly satisfied with the experiment, and, with others present, say, that, with perfect valves, the "Reade" will be difficult to beat. Several times each day am interrogated, "When is Straw coming?" Can you give me an answer?

Yours respectfully,

L. L. SOUTHWICK.

1744

EXHIBIT LIVERMORE COPY 41.

MAY 14, 1860.

L. L. SOUTHWICK, Esq., *Troy, N.Y.*

*Dear Sir*,—I have yours of the 11th inst. The brass plates for the valves are now at the rubber-factory, and I am in the daily expectation of receiving them. If we cannot make a valve stand, the whole difficulty can be cured by soldering a bar in each of the spaces  
1745 under the valve, in that way dividing the space which



the valve has to cover. The valves in "The Fire King," which were precisely like the *first* put into "The Arba Reade," show no signs of failure; and the only difference in the pump to account for the different working of the valves is, the space the valve has to cover in "The Arba Reade" is twenty-five per cent the larger.

I had fixed a day to visit you last week, when I was summoned to attend court in Nashua. I shall probably  
1746 be at liberty in a day or two, when you may say to inquiring friends, I shall be with you.

Yours very truly,

E. A. STRAW

#### EXHIBIT LIVERMORE COPY 42.

TROY, June 4, 1860.

MR. E. A. STRAW.

*Sir*, — The new valves on brass plates came to hand  
1747 a few days since. Have tried them. Found one that the outside layer separated from main body. Others show some indications of wear. Some time since our engineer made one valve (for suction) of leather. Taking several pieces, making about seven-eighths inch thick, soaked them in warm tallow, pounded each piece well, pegged the whole together, put under powerful press for forty-eight hours, then riveted with copper rivets and brass, brass bush put in centre to play on pin, then put in lathe, and faced off. This valve has  
1748 stood all the tests, and are having seven more made to complete the suction. Have made arrangements to have the *long-talked-of* exhibition take place September 19, next, under the direction and on the grounds of our County Agricultural Society. You will receive circular, to which I hope you will respond, and be on hand with something worth looking at.

Yours respectfully,

L. L. SOUTHWICK.

1749 P.S. — Have abandoned all hope of visit from you, and shall soon have resolution offered voting thanks for splendid present, &c.

## EXHIBIT LIVERMORE COPY 43.

TROY, June 5, 1860.

MR. E. A. STRAW.

- Sir, — This morning letter was received by one of the "Readers" from chairman of committee at Newark, N.J., in reference to steamers, saying that there had
- 1750 been exhibition in their city by Lee & Larned, and Reany & Neaffie, of their different machines, and that they had received lithograph of yours, and requesting information respecting the performance of the "Reade." Have answered their inquiries, and tendered them exhibition at any time they may be pleased to visit us. Lee (of the firm of Lee & Larned) was here a short time since, and examined the machine. One of their agents has been here several times. He was here last Thursday. We had received same day a
- 1751 hundred feet three-inch rubber hose. The machine was taken out, fifty feet of the above hose attached, and played stream through one and a fourth nozzle. The agent designated the point to measure; and, much to his astonishment, it was two hundred and fifty feet. It is proposed to make the following experiment with the "Reade" (the result of which you shall have), for the purpose of ascertaining capacity. It is proposed to attach to the shaft of the "Reade" indicator, similar to dial of metres, for the purpose of ascertaining the
- 1752 revolutions. The machine to be taken to Gas Works, and suction put in tank containing holder (tank, sixty-five feet diameter by twenty feet deep). The tank to be provided with float, arranged as follows: Iron pipe, to stand on bottom, with inlet about six feet above bottom (to avoid being affected by surface motion), extending to suitable height, to connect four-inch tin pipe, which shall contain float; to stem of float is to be attached rack, twenty inches long, the teeth of which shall be so geared to metre dial (having four indexes)
- 1753 that the fall of float will move the first hand one point. This will give inches, next tenth, next one hundredth, next one thousandth. It is reversing the dial from the

manner of using in metres. The object of this trial is to ascertain the quantity of water that will be discharged in given time,—the quantity per revolution. Should you be able to understand what we are *driving* at, and offer any suggestions that will make the experiment more satisfactory, would be pleased to have you.

Yours respectfully,

1754

L. L. SOUTHWICK.

EXHIBIT LIVERMORE COPY 44.

JUNE 8, 1860.

L. L. SOUTHWICK, Esq., *Troy, N. Y.*

1755 *Dear Sir*,—Yours of the 4th and 5th inst. came duly to hand. Do not despair of yet seeing me in Troy: I mean to come; and, when I do, you can present me with that *vote of thanks*. We have tried a leather valve very similar to yours, except we introduced a plate of iron between the pieces of leather, and find it works well; but we find also, on our first pump, that the rubber stands perfectly. This has induced us to make a new pattern for a valve-plate, with smaller apertures. If this should work as well as we have every reason to think it will, we shall hold ourselves ready to put a set into "The Arba Reade" if you wish us to. You seem to be putting the "Reade" 1756 through her paces in good shape.

We tried our "*pony*" last week, for the first time since it was finished, before a committee from the city of Chelsea. It threw a stream through one hundred feet of hose and one and one-eighth nozzle, five feet over the top [of] our target-pole. This makes a stream two hundred and fifteen *feet high* from the ground where the hosemen stood, and two hundred and twenty feet from the surface of the water in the pond from which the engine drew her water. We call this out 1757 here very good playing for a machine of her weight, which is four thousand four hundred and ninety-two pounds *empty*. She is built on the principle of "The Arba Reade," but has an eight-inch steam cylinder and a four and three-quarter inch pump.

I have been in correspondence with the Newark people, and am looking for the committee here in a few days. I hope they will take your city on the way, for I do not believe they can find a more favorable specimen of a steam fire-engine than you can show them.

- 1758 I shall look with much interest for the result of your trial of the capacity of the "Reade." I think your arrangement for an accurate measure of the water is as perfect as possible. You will get, through four lines of hose, open butts, with *two suction*s, over eight hundred gallons per minute, — I hope.

Yours very truly,

E. A. STRAW.

1759

EXHIBIT LIVERMORE COPY 45.

TROY, June 8, 1860.

MR. E. A. STRAW, *Manchester, N.H.*

- Dear Sir, — Not having had the pleasure of seeing you here so soon as we had reason to expect you, I write you to get some information in regard to the steamer of "light weight" you are now building at Manchester. A company, now organizing upon the  
1760 same basis as our own, have about raised the means necessary to purchase a steamer, and desired that I should write you to get terms, &c., for it.

They had a little information from Mr. Batchelder in relation to it; and I think there is no doubt but if the article in question is what they think it is, it would be very satisfactory to them to purchase it.

- The "Reade" is still winning the golden opinions of our citizens in the prompt and satisfactory manner, thus far, in which she does fire-duty. The metal  
1761 valves, faced with rubber, have, however, given out. We are now using leather ones, made by Knibbs, our engineer, which, so far, do well.

We expected to have had a visit from the Portland engine "Greyhound," but it failed to make its appearance.

The "Reade" did some fine work last week before some visitors from Newark, which was also witnessed by Dubois, agent for Lee & Larned.

1762 You will probably get a visit from the Newark company this next week. They tell us in a letter to Mayor Read, thus far "they are inclined to favor the work of the Amoskeag Company."

If, as we have supposed, it was the intention of your company to exhibit the light engine, now being built, you must try and make Troy on your visit. I have no doubt the city will certainly purchase two more during the season.

1763 If you will please inform me the price of the steamer in question, also its weight, and some description of its steam and water capacity, I will communicate with the company. I write at their request. If you will visit Troy, we shall be glad to make your visit as pleasant as possible.

Very respectfully,

W. E. HAGAN.

#### EXHIBIT LIVERMORE COPY 46.

1764

JUNE 18, 1860.

W. E. HAGAN, Esq., *Troy, N.Y.*

*Dear Sir,* — Yours of the 8th inst. came duly to hand; but, having the misfortune to be a member of our State Legislature, I was necessarily absent last week, and this must be my excuse for so late a reply.

1765 Our first light steamer is completed, and has gone into service here. She is fitted to be drawn by horses; and her weight, without supplies, was four thousand four hundred and ninety-two pounds. She works to a charm *in every particular*, and, I think, has played the highest vertical stream on record; viz., two hundred and fifteen feet from the ground where the hosemen stood; two hundred and twenty feet from the surface of the water in the pond from which she drew. The playing was through one hundred feet of hose, with a one and one-eighth inch nozzle, and made beside our flag-staff, which is two hundred and ten feet high.

We are now setting up *three* of the same class precisely, except being fitted to be drawn by hand, the  
 1766 weight of which I feel very sure will not exceed three thousand five hundred pounds. I hope to have one ready to play on the fourth of July.

We have not definitely determined on the price of these hand-steamers; but one shall not, to your company, in any event, exceed \$2,750, and I shall try hard to afford it at even less than that. We have made a valve-plate which has cured all trouble with the rubber valves.

I shall certainly visit Troy between now and the  
 1767 first of July, and will make it in my way to see you on this subject.

I have the Newark committee, and one from St. John, N.B., here to-day: and we shall undoubtedly sell an engine to the Newark company; in which case we shall get the long-wished-for opportunity of trying one of our engines with Lee & Larned's.

Please make my respects to Messrs. Southwick, Starbuck, Barton, and others; and believe me,

Yours very truly,

1768

E. A. STRAW.

#### EXHIBIT LIVERMORE COPY 47.

TROY, August 10, 1860.

MR. E. A. STRAW.

Sir,— The long-talked trial of steamers is to come off at County Fair, September 19. Others, with myself,  
 1769 are appointed to get up programme and make the arrangements. We are writing to different parties to get their views of the manner of playing, and requirements to entitle machines to premiums. When answers are received, hope to make programme that will be satisfactory. Will you please give your views and suggestions at length? From papers sent, you will notice that The "Reade" is called upon to do a variety of work, and, I am happy to inform you, has thus far done all

that was required. I saw by paper that it was in contemplation to have steamer at Saratoga. Took the liberty of sending one of your circulars; hope that may lead to opening correspondence, if nothing more. As time for getting up trial is short, would request your early attention.

Yours respectfully,

L. L. SOUTHWICK.

P. S. — Have written Capt. Bird in reference to trial.

1771

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EXHIBIT LIVERMORE COPY 48.

AUGUST 15, 1860.

MR. L. L. SOUTHWICK, *Troy, N. Y.*

*Dear Sir,* — Yours of the 10th was duly received. You have fixed upon the same date for your trial of steamers as the United States Agricultural Society at Cincinnati.

I do not know that I wish to suggest any method of playing or tests to which the engines ought to be subjected. Your committee are fully aware of what a fire-engine ought to be capable of doing: and I think can fully arrange the trial so as to determine the capacity of each machine, *and its power of endurance*, — say tests to determine quickness in generating steam; ability to maintain steam when doing severe work; capacity, as determined by distance, either through long line of hose, or otherwise; and capacity, as determined by the quantity of water discharged in a given time. You all know about these things; and of course we are willing to put our machines to any test with others, and submit every thing to the good judgment of the committee.

Yours very truly,

E. A. STRAW.

## 1774 EXHIBIT LIVERMORE COPY 49.

TROY, August 23, 1860.

MR. E. A. STRAW.

*Sir*, — Some days since forwarded to your address the brass *caption* of the "Reade's" smoke-pipe for repair or renewing, as you may think best, — which you will have put in good order, and return. The "Reade" has been out in service twice within the past week, and on both occasions did all that was  
 1775 required. Herewith send you circular of exhibition. Have this day received letter from Lee & Larned, in which they say they will be on hand with hand-machines, and will send self-propeller and give us all a ride. Hope that you will have machines here, and be on hand yourself to participate in the ride. The perforated grate of the "Reade" is getting in bad shape. What will new one cost? Have you pattern for grate-bars? If so, what will be additional weight?

Yours respectfully,

1776

L. L. SOUTHWICK.

## EXHIBIT LIVERMORE COPY 50.

AUGUST 30, 1860.

L. L. SOUTHWICK, *Troy, N.Y.*

*Dear Sir*, — The brass cap of "The Arba Reade's" chimney has been received. Upon examination, our  
 1777 coppersmith decides to make a new one rather than undertake to repair the old.

The perforated grates, like that of the "Reade," cost \$7.50. We will send you a new one if you like. We have never made any patterns for a cast-iron grate. I think a proper cast-iron grate would add from one hundred to one hundred and fifty pounds to the weight of the engine; and, from what I can learn on inquiry from those that have used them, they are no more durable than the perforated grate.



- 1778 If I can leave home, I shall surely be at Troy to ride on Lee & Larned iron horse. How early ought the engines to be on the ground?

Yours very truly,  
E. A. STRAW.

## EXHIBIT LIVERMORE COPY 51.

- 1779 SEPTEMBER 13, 1860.

C. A. LUCE, Esq.,

*Dear Sir,* — My engagements here are such that I find it impossible to meet you at Norwich, as I proposed.

- You will proceed to Newark with the engine; and if, upon your arrival there, you find you can reach Cincinnati with a small engine on or before the 18th inst., I think you had better keep on, and take the men who accompanied the engine from here with you. If there  
1780 is *any doubt* about your arrival at Cincinnati as early as the 18th, I think it will be of no use to go farther than Newark. In this event, you will remain at Newark or New York for several days, and will have an opportunity to communicate with me. I am willing "The Amoskeag" No. 2 should be exhibited in New York and vicinity as much as is deemed profitable, and desire to have it go from New York to Troy, should it not go to Cincinnati.

- At Troy it goes to the house of "The Arba Reade;"  
1781 and you will call upon Mr. L. L. Southwick, who will give you any information or assistance there that you may need.

We shall send the Detroit engine from here directly to Troy in season for their fair, say about the 25th inst.; and both Mr. Bean and myself undoubtedly will be present at the exhibition at Troy.

If you wish, you can draw upon me for such sum of money as you need for the expenses of yourself, engine, and men.

- 1782 Should you reach Cincinnati, you will of course at

once see Mr. Frederic Smyth, who has promised me all the assistance he can render; and in all matters there be guided by your own judgment. You will find that Mr. Furlong understands all about running and taking care of the engine.

Consult Mr. Bean — who will hand you this letter — as fully as possible, before he returns home, on all points that may occur to you, and upon occasion consult me by telegram or letter.

1783

Yours truly,

E. A. STRAW.

P.S. — Send me all newspapers that contain any notice of our engines, or of the engines of other makers.

E. A. S.

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#### EXHIBIT LIVERMORE COPY 52.

1784

SEPTEMBER 19, 1860.

C. A. LUCE, Esq., No. 92 Wall Street, New York.

*Dear Sir,* — I am in receipt of your favors of the 15th and 17th, and think you have been quite successful with the engine.

Our price for the engine would be \$3,000 for one like "The Minnehaha," and \$2,750 for one like "Amoskeag" No. 2. "The Minnehaha" has a rig for both horses and men. If called upon to furnish both, in any other case, one would be an extra charge, at its cost. The prices are cash after a satisfactory trial of the engine. the engine delivered complete, as specified in our printed circular.

1785

I have some hopes of New York yet; and if there is an opportunity to sell one or more of our engines there at an advance of five hundred dollars on our price, that money can be divided amongst those interested in the purchase. This practice you can defend by the maxim of "When you're with the Romans, you must do as the Romans do." I leave this matter entirely in your hands, if it is necessary to make overtures of this

1786

kind. If we cannot get our prices for the engines delivered, it is no object to sell them. You will, of course, exercise great caution in this matter; but an intimation of this kind, perhaps, to Mr. Drew, may have its effect.

I had written so far when Mr. Bean returned, and from him I learn of your complete success in New York. I have yours, also, of the 18th. The engine  
 1787 trials at Troy come off on the 26th and 27th, and you must certainly be there with "The Amoskeag" No. 2 as early as Tuesday morning, so as to be there on the evening of the 25th, Tuesday, to draw lots for the order of working the engines.

I enclose a Boston check, payable to your order, for two hundred dollars (\$200).

I shall be at Troy, but may not be there until the arrival of the night-train on Tuesday.

Yours very truly,

1788

E. A. STRAW.

#### EXHIBIT LIVERMORE COPY 53.

SEPTEMBER 21, 1860.

W. E. HAGAN, Esq., *Troy, N. Y.*

*Dear Sir,*—I am in receipt of yours of the 20th inst.

Before you receive this letter I trust you will have seen "The Amoskeag" No. 2, which is the pattern of  
 1789 our engine the next in size smaller than "The Arba Reade." I think the machine will please all your people who are interested in fire matters. If we should not be able to leave "The Amoskeag" at Troy, we could deliver your city one of the same pattern in from three to four weeks after receiving an order. In regard to "The Amoskeag," I cannot be certain whether she is sold, or not, until I see Mr. Luce, who is now with the engine, and will be at Troy.

I have no doubt of your having a fine time at your  
 1790 trial, and shall be there to see. We send "The Huron," a first-class double-engine, built for the city of

Detroit, and I hope all other builders will be as well represented as we shall be. I am afraid your "trough" will be likely to cut off a little from the distance of some of the fancy playing, about which we read occasionally.

Yours very truly,

E. A. STRAW.

1791

EXHIBIT LIVERMORE COPY 54.

MANCHESTER, N.H., October 2, 1860.

C. A. LUCE, Esq., *No. 92 Wall Street, New York.*

1792 *Dear Sir,* — Owing to the great rush to our State Fair, held to-day, the railroad trains are all out of joint, and the Northern train so late that as to miss the connection at Nashua, and prevent my coming to New York to-night, as I have telegraphed to you. I have such engagements here as will prevent my coming on to New York any other day this week.

I wish you would try and induce Mr. Marks to come on as far as Boston. I will meet him there at any time, if notified in season, either by telegraph or otherwise. Mr. Marks will be well paid for his visit to Boston in seeing their steam-engine management, even if he makes up his mind to buy some other fire-engine than ours.

1793 After the tenth of this month, if it is important, I can arrange to be in New York and Brooklyn for several days; in the mean time you will have time to go to Troy and Detroit and return. I have no doubt but that you can say to these gentlemen in New York and Brooklyn all that is necessary in the present state of the matter, and perhaps induce Mr. Marks to give us an order for one or more engines.

We are in a situation to furnish engines of either class at short notice.

1794 I send you all the papers relating to the Detroit engine, by which you will see that the engine was to be built according to our specifications, and to the acceptance of the city council after satisfactory trials. I

they are not prepared to pay for her at once you need not wait at Detroit longer than to get a formal acceptance of it by the proper authorities and a receipt for the engine.

You will find Mr. Edmunds a very particular old gentleman, but one you will have no difficulty in getting along with. If you can manage to be there with  
 1795 Capt. Harris, chief engineer of Chicago, you will find he will help you along very much with some of the committee, particularly Mr. Sutton. Give my regards to Mr. Harris, and say to him that he shall shortly hear from me.

Yours in haste,

E. A. STRAW.

Let me hear from you often.

1796

#### EXHIBIT LIVERMORE COPY 55.

NEW YORK, October 4, 1860.

E. A. STRAW, Esq.

*Dear Sir,*—Your favor of the 2d, mailed the 3d inst., enclosing papers relative to the Detroit engine, I have received this morning. From your letter and the enclosures I at once infer what I have to do in Detroit; and shall leave here this P.M. on my way there, *via*  
 1797 Troy, remaining in Troy only long enough to obtain satisfactory security for "The Amoskeag" No. 2.

Since the receipt of your letter I have seen Messrs. Harris, Boyd, and Allen, who, it appears, were so desirous of seeing you here that they caused a message to be sent to you to come on. I have, however, explained to them how that it is impossible for you to do so now; and Boyd and Allen leave for Boston this P.M., and say they will write you immediately on their return home, and urge the necessity of having a small engine  
 1798 placed here immediately. In writing you in haste, yesterday, I failed to inform you that Mr. Marks left the city sooner than he expected, and on my return I did not see him. He is at Princeton, N.J., where he is

visiting a son who is in college there. I found an intimate friend of his, to whom I made known our success at Troy; and he suggested that if you came on, as I then supposed you would, that you should go to Princeton. I now think that if you can get Mr. Decker to write to him in New Orleans, it will have  
 1799 effect. I shall leave Detroit, on my return here, at the earliest moment possible; but, if I should fail to meet you here, I would suggest that you see the following parties:—

John Decker, chief engineer, 21 Elizabeth Street; Henry Z. Drew, at "Exempt" house, in the Park, or at his dwelling-house, 193 Grand Street; William Phillips, one of the Newark Exempts, who is with Garthwait, Darcy, & Co., 341 Broadway; William Burrell, secretary Fireman's Trust Insurance Com-  
 1800 pany, Court Street, Brooklyn,—Mr. B. is foreman of engine No. 17, of Brooklyn, and very well pleased with our machines; Mr. Cashion, Fulton Fire Insurance Company, 40 Wall Street, one of the committee of Brooklyn Common Council. I learn that Mr. William Furey is the chairman of the committee. He is a custom-house officer; and I have been unable to see him since my return from Troy, although I have spent hours in looking him up. I think he will be governed entirely by what *he* can make. I hope I shall be able  
 1801 to see you here; but, as I think it very important for you to be here as soon as convenient, I may not return in time.

Yours truly,

CHAS. A. LUCE.

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EXHIBIT LIVERMORE COPY 56.

TROY PATENT CORDAGE COMPANY,  
 1802 TROY, N.Y., October 23, 1860.

E. A. STRAW, *Agent, Manchester.*

*Dear Sir,*—Your favor, dated 18th, came duly to hand, and note contents.

The "hose-pipe" arrived day following our annual

parade. At a trial this day we found pipe leaked badly; and are short one full set of nozzles, viz., one-eighth, four-fourths, one and one-eighth, one and one-fourth inch; cannot now play two streams like, as we wish to. We are soon to make an exhibition before  
 1803 the "City Counsel," and desire to work all of above sizes, first and last, with two streams; cannot do it as we are rigged.

In your letter nothing is said regarding "brake" on after wheels of steamer. This is of vital importance to us, and cannot do without one with safety. The brake and pole, or spire arrangement, was understood by your master-machinist "B." and friend "Luce" at the time. Your attention is called to said point. Are using a temporary pole for horses at present.  
 1804 Have run out at alarms by hand and horse-power each. Have not been in service at fire since Batchelder left. Worked steamer some four times, to learn our engineer, &c.

Have made partial arrangements for a grand exhibition in city of Albany next week, provided you forward us the spire, or pole, in time. Gov. Morgan, the mayor, chief engineer McQuade, E. Corning, Esq., and lots of notables, will be present. We desire to go in shape, and do some fine work, wind, &c., favorable.  
 1805 Intend also to pay our respects to Cohoes, Waterford, and Lansingburgh. We intend to show our neighbors that "steam" is *the* thing, and we have just *the* little "pet" that can perform to best satisfaction, &c. Here-with you notice of our "Fireman's Annual Parade." The steamer was on hand, surprising some of the New-York City firemen regarding *Yankee* workmanship.

What is the name of "signal manufacturer" who made our signal light? Give us his address. Please forward our fixings as soon as possible, and much  
 1806 oblige

Many friends, &c.,

SAMUEL K. BRIGGS.

## EXHIBIT LIVERMORE COPY 57.

OCTOBER 29, 1860.

SAMUEL K. BRIGGS, Esq., *Troy, N.Y.*

1807 *Dear Sir,*— I am just in receipt of your favor of the 23d inst.

The pole for your steam-engine is very nearly finished, and will be sent to you at once, as soon as completed. We are also making a "brake" and an "air-chamber" for the engine, which we shall send up, with a man to put them on, as soon as completed. If you can conveniently, you had better wait until the "air-chamber" is put upon the engine before you make your proposed excursion to Albany and other places. We shall send you also another set of "nozzles," although our rule is to furnish but one set with an engine, supposing that no one would wish to play at the same time two streams of the same size.

1808

Your signal-lantern was made by Messrs. Cary & Young, of Newark, N.J.

I shall always be glad to hear of the doings of your engine, and you will keep us posted.

Yours very truly,

E. A. STRAW.

1809

## EXHIBIT LIVERMORE COPY 58.

TROY, October 31, 1860.

MR. E. A. STRAW.

*Sir,*— When will the men to put new valve-plates into steamer "Reade" be here? The object in making the inquiry is, that preparation for doing other work at same time may be made. Tire require re-setting, and some other small matters require attention.

1810 The sporting days of the "Reade" are about over. She will probably in future be confined to actual service. The last time at work was at factories on the hill. (Newspaper sent you.) The *pony* does all the fancy work, being out every few days, and in every



instance gaining friends for her builders, as well as herself. She would be much improved by upright air-chamber (similar to "Reade"). There is too much working on the hose.

Yours respectfully,

1811

L. L. SOUTHWICK.

EXHIBIT LIVERMORE COPY 59.

NOVEMBER 3, 1860.

MR. L. L. SOUTHWICK, *Troy, N. Y.*

*Dear Sir,*—I am in the receipt of your favor of the 31st ult.

We shall send the valve-plates so as to have them  
1812 put into the "Reade" by the same men who are to put the upright air-chamber upon the *pony*. They will be in Troy probably in the course of a week. I am glad to hear your favorable account of the *pony*.

You will see by the newspapers that we have not got through entirely with Messrs. Lee & Larned. We have sent one of our small engines to New York this week, which I think will trouble them very much. I feel that we are quite sure to supply the city of Brooklyn; and we now have the influence of some very influential parties in the city of New York; and I am  
1813 expecting the chief engineer of St. Louis to be here next week for a small engine. So we go.

My regards to all our friends.

Yours very truly,

E. A. STRAW.

EXHIBIT LIVERMORE COPY 60.

1814

TROY, November 15, 1860.

E. A. STRAW, Esq.,

*Agent of Amoskeag Manufacturing Company.*

*Dear Sir,*—Your favor, dated 5th, came duly to hand, and also the "air-chamber," per express, Thursday last, and the "iron tongue, whiffletrees, and brake," per

1815 railroad freight, Saturday following, all in good condition; — but our friend Fur-“long” has been “long” time coming, and no arrival yet. We are in no hurry, excepting by way of one cause, i.e., a large city sewer is being laid through our street, making it dangerous for us to “roll,” and this week affords good opportunity to “lay up” for improvements, &c. We would not like name being in house for repairs the first fire when street is passable. As it is now, we have capital excuse.

The air-vessel will be a decided improvement on steamer, — not but what there is a large capacity now, but not in right shape. We shall see difference at pipe on hose; and steamer *will* stand steadier when 1816 working, which will ease the strain very much, &c. We believed you were fully “posted” in regard to working operations of our little “Gem.” We shall, without doubt, put the “signal” on top air-chamber. We wish you to forward us by “express” immediately a “seat with side-lamps.” We propose to go the whole figure for horses. Commencing to-day the erection of a cheap, temporary wood barn in rear of the engine-house. This will put us on “quick footing” for horse when needed. With fancy tongue, seat, air-vessel, we 1817 shall by far eclipse all steamers in our vicinity, adding a new style to your increasing variety. We shall want branch for two streams made for us soon, — style coupling is adopted for our new hose, which is referred to committee on fire-department with power (see enclosed slips). We desire cotton hose, with Bliss coupling. With branch can work three streams. Our aim is more to save “hose” in working two streams as follows: Lead out, say, five hundred feet in single lengths from steamer, put on branch-end five hundred feet, and lay 1818 one hundred feet more, fifty feet for each branch, and you have two fair streams on small fire with six hundred feet hose only, — the usual way take just eleven hundred feet to do same work. There would be good pressure on single-line hose, but judgment must be used on *all* occasions. You can draw on me the usual time for cash bills for said seat, and it will be honored;

or you may wait until "branch" arrangement is settled, and adjust same all one time. Your Mr. Furlong, on his return, can take with him the iron hand-tongue  
 1819 which came on with the steamer, or remain subject to your order. The people at Albany, in view of our visit there, have raised new "pole" on city hall some ten or fifteen feet higher than old one, which no steamer has ever thrown over. We desire to be in Albany on 29th inst., Thanksgiving Day. Herewith you have "item" of Messrs. Button & Blake of Waterford, and his first attempt. Button & Blake propose putting a steamer in Troy *sure*, having offered Washington Volunteer Fire Company one hundred  
 1820 dollars more than original cost for their hand-engine of his build. The company have expended some three or four hundred dollars on engine since built, by way improvements, which they own, being an independent company chartered by State. Button & Blake will make most any exchange with said company. Committees who propose visiting Seneca Falls Works, or Button & Blake, will be apt to pass through our city, and we shall always stand ready to show the public the "Elephant." I have been informed to-day, on fair  
 1821 authority, that Alderman Norton of the eighth ward (lower part city) had started a subscription for steamer in his locality, and has already eight hundred dollars subscribed, and proposed to ask city council to appropriate our hand and other engines in department towards balance. Will "post" you regarding same if any thing transpires tangible.

Been called away several times since commencing this, and shall now make an end, trusting you will find time to peruse same.

1822

With best wishes, &amp;c.,

Very respectfully,

SAMUEL K. BRIGGS.

## EXHIBIT LIVERMORE COPY 61.

TROY, January 15, 1861.

1823 MR. E. A. STRAW.

*Sir*, — Supposing that you had not forgotten or lost interest in the steamer "Reade," will take the liberty of informing of some (we think) useful attachments that have been made. We are sometimes annoyed by frost about our hydrants. They are, as you may recollect, surrounded by wood-boxes about two and a half feet above walk, and are packed with straw (not E. A.) for protection. We have put valve in boiler, and have rubber hose, which connects with iron pipe, about six feet long, which is thrust through the straw and discharges steam at bottom below the valve-seat. As yet have not had occasion to use. A few days since had "Reade" out to flood ice and ascertain the effects of cold (thermometer at zero). Tried the thawing arrangement; found that would pass through ice about eight inches as easy as trier into butter. The only freezing was water-gauge pipe. To prevent freezing of other pipes, have since made steam connection with feed-pipes in such manner that all pipes may be heated, pump, and water in tank. Have also put on indicator attached to eccentric valve-rod; work flooding one and three-quarters hour, — average one hundred and five per minute. Should you know of a better way for thawing hydrants, please inform, as the "Reade" must have all improvements, and be as near perfect as possible. You will see by paper sent you this morning that our friend Starbuck has been elected chief engineer. This was effected by Shephard and others connected with the pony, — Starbuck not aware that he was candidate, and only few members of the "Reade" in the secret. It is certainly a victory for *vapor*. In putting in the new grate of the "Reade" (which will be paid for next meeting, — has been forgotten), the sheet was crowned about four inches and put in on top of knees. This is found to be great advantage in steaming, and certainly makes much more steam than

before, requiring careful firing, with door open, to prevent blowing off on any ordinary work.

Yours respectfully,

1827

L. L. SOUTHWICK.

# EXHIBIT LIVERMORE COPY 62.

TROY, March 26, 1861.

E. A. STRAW, Esq., *Manchester.*

*Dear Sir,* — Another steamer may be wanted by our city during the present season. Will you please inform me how soon after receiving an order you can  
 1828 deliver one, the same as "The Arba Reade," and what will be your price? There are some individuals in town that think that style of steamer about right for this latitude. Providing there should be a desire on the part of parties interested to exchange the small steamer now used by "Eagle Company No. 10," bought of you last fall, for another like the "Reade," on what terms would you *swap*? I think we should have three steamers of the "Reade's" capacity in our city. I  
 1829 make the above inquiries on my own account, as I may be called on by *the powers that be* for my opinion in the matter, having been appointed chief engineer in my old age. I served as such in 1847, '48, and '49.

Respectfully yours,

N. B. STARBUCK.

## SLIPS ENCLOSED IN LETTER.

MEETING. — The Arba Reade Steam Fire-Engine Company holds a meeting this evening at eight o'clock,  
 1830 to choose a captain in place of N. B. Starbuck, elevated to the position of chief engineer. E. W. Stoddard, first assistant, will probably be tendered the captainship.

MR. N. B. STARBUCK, the new chief engineer of the fire-department, was sworn into office last evening. The flag at "The Arba Reade" house was "waving in

the breeze" to-day in honor of the event. Mr. William T. McCarty, first assistant engineer, was also sworn in. The flag of Franklin Hose Company No. 1 was hoisted  
1831 to-day.

ARBA READE STEAMER. — The election of captain in this company, to fill the vacancy occasioned by the appointment of Mr. N. B. Starbuck as chief engineer of the fire-department, took place at the engine-house last evening. The result was as follows: Mr. E. W. Stoddard, late first assistant, was elected captain; Mr. E. N. Buel, late second assistant, was elected first assistant in place of Mr. Stoddard, promoted; Mr. L. L. Southwick, late vice-president of the company, was  
1832 elected second assistant in place of Mr. Buel, promoted. Mr. N. B. Starbuck was elected vice-president, vice Mr. Southwick, resigned.

By the election of Mr. Starbuck to the office of vice-president, he will still retain a position in the executive board.

After the election of officers, a vote of thanks was tendered Mr. Starbuck for his efficient services as captain, and his untiring devotion to the interests of the company.

1833 Messrs. William E. Hagan, A. A. Wotkyns, and Benjamin D. Benson, were appointed a committee to present Mr. Starbuck with one of the company's fire-hats, for his use and benefit.

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#### EXHIBIT LIVERMORE COPY 63.

MARCH 28, 1861.

1834 N. B. STARBUCK, Esq., *Troy, N. Y.*

*Dear Sir,* — I have your favor of the 26th inst., and am glad to hear once more from the "old line."

We should furnish your city with a steamer like "The Arba Reade," complete in all respects, for the sum of three thousand dollars, and, should you wish to make the change you allude to for "Eagle" 10, I should be disposed to do it on terms that would be favorable

to your city. I should find no difficulty in placing the small steamer. We have orders for nine almost precisely like her, now on our books.

I am, however, of the opinion, *that, for the purposes of putting out fires*, first-class engines are to be preferred in all cases, except, perhaps, in cities where hydrants are relied upon to furnish water. Our second-class engines will in most cases take all the water that can be furnished from a hydrant. The city of Detroit, whose first engine "The Huron," you will remember, have since ordered three more precisely like the first, thus making their whole department of machines exactly alike, and all first class.

We continue to meet with excellent success with our engine. The last order received is No. 42, and comes from Philadelphia, and is for a first-class machine. We have one of our second class now in service there, which is represented as giving complete satisfaction.

You probably heard through the papers that "The Philadelphia Hose" challenged the Newark company to play against their engine for the sum of five hundred dollars; but you may not have heard that the Newark company formally accepted the challenge, and named their terms as follows: viz., —

One hundred dollars on the first water, one hundred dollars on the greatest distance made within thirty minutes after lighting the fire, and one hundred dollars on the greatest quantity pumped in a given time; the balance of two hundred dollars on the general result. Neither engine to be played previously on the same day; to be filled with water from the same source; to stand side by side, both draughting their water from the same reservoir, and both to light their fires at the same time by a given signal.

It is now understood that "The Philadelphia," although the challenging party, don't play. I have not heard their reasons. I believe this "Philadelphia Hose" was the engine some of your *young men* were so anxious to match the "Reade" against; if so, the above may be interesting to them, — I mean such young men as Mr. Barton, Southwick, Hagan, *et id omne genus*.

Men of dignity, age, and honors, such as chief engi-  
 1839 neers of fire-departments, are not supposed to care  
 for such things.

Should your city order one or more engines, give us  
 as much time to make them as you can. We should  
 like three months.

Remember me to all old friends, and I count as such  
 all the "Reade's" company.

And believe me,

Yours very truly,

E. A. STRAW.

1840

# EXHIBIT LIVERMORE COPY 64.

TROY, June 26, 1861.

E. A. STRAW, Esq.,

*Agent Amoskeag Manufacturing Company.*

*Dear Sir,*—After a heap of talk our fire commis-  
 sioners resolved to advertise for proposals for a steam  
 1841 fire-engine, same capacity of "The Arba Reade." The  
 law requires advertising, otherwise an order would  
 have been sent you at once. After receiving your  
 letter of 28th March, I told some of the parties in  
 power of your offer to furnish a duplicate of the  
 "Reade" for \$3,000. At the last meeting of the Com-  
 mon Council, that body authorized the fire commis-  
 sioners to invest \$3,200 in a steamer and hose-cart.  
 Cannot you furnish iron wheels on steamer, instead of  
 the ones with wood spokes and felloes. The "Reade's"  
 1842 tires have been set several times, and the large wheels  
 are not as true as they were one time. If you can  
 spare the time, others, as well as myself, would like to  
 see you in our city; and I should like to have fire  
 commissioners talk with you.

Respectfully yours,

N. B. STARBUCK.



## 1843 EXHIBIT LIVERMORE COPY 65.

JULY 1, 1861.

N. B. STARBUCK, Esq., *Troy, N. Y.*

*Dear Sir,*—Your favor of the 20th ult. was duly received, and the contents noted.

I think I will try and visit you some time next week, and have a talk about steamers.

We should build iron wheels where the parties desired, and, from the test of the year's use I have seen  
1844 in Boston, I am inclined to think they will stand service. I did have great doubts of it. We are still having considerable steam fire-engine work, but the other work for the shop counts but little.

We should propose to furnish you a steam fire-engine, a duplicate of the "Reade," or of her capacity, with some obvious improvements, for the sum of three thousand dollars, and should put on iron wheels if so desired.

Yours very truly,

1845

E. A. STRAW.

## EXHIBIT LIVERMORE COPY 66.

TROY, July 8, 1861.

MR. E. STRAW.

*Sir,*—Our fire commissioners have advertised (as required by law) for steamer, same capacity as the "Reade." Suppose that you have received paper with advertisement. Have you fitted out any of your  
1846 steamers with iron wheels? This you mentioned when here last fall. It seems to me, from experience with the "Reade," that they would be preferable; there is such exposure of the back wheels that the wood is constantly getting loose. It had occurred to me, that, in getting another steamer, it would be well to have the wheels of iron, and the boxes bored to fit the axle's of the "Reade"; have set iron wheels made for the "Reade," then the present wood wheels would answer for spare to be used in case of accident to either.

1847 What would probably be the expense of a set of iron wheels for the "Reade"? Also give the expense of the wood set. There is a small bill that you have for pump packages for the steamer, which was rendered me, and is mislaid. You will please send duplicate, and oblige

L. L. SOUTHWICK.

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EXHIBIT LIVERMORE COPY 67.

1848

TROY, August 13, 1861.

MR. E. A. STRAW.

*Sir*, — There are some signs of the suction of the "Reade" giving out. It is proposed to make a cement of shellac and rubber, with which to coat them, and wind with cotton cloth, spirally lapping edges, then to serve the whole length with tarred marlin. It will of course add to the weight, and render less pliable. Perhaps you can suggest some method preferable.

1849 Mr. Starbuck wrote you yesterday making suggestions in regard to new steamer; allow me to add that the suction couplings be made same size as "Reade," so that the whole fifty-six feet may be used together, and that the thread on gates be the same. There was samples sent by which the "Reade's" were cut.

Yours respectfully,

L. L. SOUTHWICK.

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1850

EXHIBIT LIVERMORE COPY 68.

TROY, August 20, 1861.

E. A. STRAW,

*Agent Amoskeag Manuf. Company, Manchester.*

*Dear Sir*, — It is proposed by some of our citizens to make up a series of prizes, say three, — one of three hundred dollars, one of two hundred dollars, and one of one hundred dollars, — to be given to exhibitors of

1851 steam fire-engines at the time and on the grounds of

our county fair, which comes off the fore part of next month. Providing the plan is carried out, would you send one or more of your steamers to our show? Last year the society expended some money in conveniences for such doings, as you know. The exhibitors to arrange as to plans of working, awarding prizes, &c. Please let me know; can we count you in?

Respectfully,

N. B. STARBUCK.

1852

### EXHIBIT LIVERMORE COPY 69.

TROY, August 28, 1861.

E. A. STRAW, Esq.,

*Agent Amoskeag Manuf. Company, Manchester, N.H.*

1853 *Dear Sir,* — Your last was duly received. Mr. Bean arrived as per programme, and I suppose, on his return, made known to you variations talked of. We called Mr. Bean's attention to the impaired condition of the two lengths of suction belonging to "The Arba Reade," — the outer layer of rubber cleaves from the canvas, — and we think some plan must be adopted for their preservation. A person in the city, who has made leather suction, thinks, by covering them with heavy harness-leather, they would serve a long time: his charge would be \$1.50 per foot. Can you suggest a better plan?

1854

Respectfully yours,

N. B. STARBUCK.

### EXHIBIT LIVERMORE COPY 70.

TROY, November 7, 1861.

E. A. STRAW, Esq.,

*Agent Amoskeag Manufacturing Company.*

1855 *Dear Sir,* — Do you intend furnishing a branch for hose connection such as you made for steamer "Rankin," without extra charge, for the steamer now build-

ing for Troy fire-department? If you do, I would like it similar to enclosed drawing, made exclusively for Bliss coupling, less cost and less bulk. We shall want one also for steamer "Reade." Please let me know how soon the new steamer will be ready to send on. As yet, no location has been decided on for it. The Common Council have twice refused to confirm the action of fire commissioners. The subject will be  
 1856 brought up in Council next week, and then we hope action of commissioners will be confirmed. At any rate, we do not want the steamer started from your shop until a location is decided on.

Respectfully yours,

N. B. STARBUCK,  
*Chief Engineer.*

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1857      EXHIBIT LIVERMORE COPY 71.

NOVEMBER 19, 1861.

N. B. STARBUCK, Esq., *Troy, N.Y.*

*Dear Sir,* — Yours of the 7th inst. was duly received, together with the sketch for the branch. We shall make and forward you one with the new steamer without extra charge. Should you want one for the "Reade," we should feel obliged to charge your city for it.

1858      Your new engine will be ready for its first trial the last of this week, or early next, and will be ready for shipment, I think, about the first of December. We shall want the name you intend for the engine, and shall feel obliged if you will let me have it as early as the middle of next week. Unless further advised before the engine is finished, we shall keep it at the shop until you order it sent forward.

Yours very truly,

E. A. STRAW. .

1859

## EXHIBIT LIVERMORE COPY 72.

TROY, December 17, 1861.

E. A. STRAW, Esq.,

*Agent Amoskeag Manufacturing Company.*

1860 *Dear Sir,*—Your favor was duly received. The matter of locating new steamer has finally been settled; and the intention is to commence building, and prosecute it with all despatch the weather will permit. "J. C. Osgood" No. 3, is the title given the new steamer, and so you may mark the same. The above name was decided on without consulting Mr. Osgood: and it is the wish of parties implicated that he should *know* nothing about it until the steamer appears in our midst; therefore, should any Trojan, or "any other man" likely to divulge, hover about your settlement, please keep dark about the name. Enclosed please find

1861 check, twenty dollars, and your bill for hose-branch furnished steamer "Rankin." I wish you would make one for steamer "Reade" similar to the markings I sent you some weeks ago. Also one similar for new steamer. I suppose, ere this, you have tried new steamer; please let me hear how she operates.

Respectfully yours,

N. B. STARBUCK,

*Chief Engineer.*

1862

## EXHIBIT LIVERMORE COPY 73.

DECEMBER 23, 1861.

N. B. STARBUCK, Esq.,

*Chief Engineer, Troy, N.Y.*

*Dear Sir,*—Yours of the 17th was duly received, with the check for twenty dollars enclosed. Your wishes in regard to the name for new steamer will be

1863 complied with.

The steamer has been tried, and worked every way in a very satisfactory manner,—Mr. Bean says, as well

as any we have ever built. The "Reade" must look out for her laurels.

You had better give us notice a week or so before you would like the engine shipped; and I will leave off the name and the last coat of varnish until I hear from you.

Yours very truly,

1864

E. A. STRAW.

EXHIBIT LIVERMORE COPY 74.

TRoy, December 26, 1861.

E. A. STRAW, Esq.,

*Agent Amoskeag Manufacturing Company.*

Dear Sir,—Your favor of 23d is received. The committee have requested me to request you to send  
 1865 the steamer to our city as soon as you can get it ready for shipment. As the house for its reception and future lodgement is being built on the location selected and recommended by fire commissioners nearly three months ago, some wise men of Board of Councilmen opposed commissioners, causing a delay, which opposition was finally overcome, and we are all right again; so, as soon as you can, please ship machine. We shall probably put it in the "Reade's" house for a while for Engineer Knibbs to handle. If not convenient to send an  
 1866 engineer with it, we will take it in charge at railroad depot, and give proper care. Please inform me what day it will arrive amongst us. I am glad to hear so good an account of it.

Respectfully,

N. B. STARBUCK,

*Chief Engineer.*

EXHIBIT LIVERMORE COPY 75.

1867

JANUARY 9, 1862.

N. B. STARBUCK, Esq.

Dear Sir,—Your new steam fire-engine was sent from here this morning, and goes *via* the Western Railroad.

I shall avail myself of your kind offer to receive and take care of the engine, as our Mr. Furlong is now absent with an engine we sent recently to Brooklyn. I have not myself seen the machine since she was dressed up, as I returned this morning from New York too late;  
1868 but I think you will all be pleased with it, and I know that in your hands it will be made to do its very best.

Yours very truly,

E. A. STRAW.

**In the Circuit Court of the United States,**

IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.

SECOND CIRCUIT.

IN EQUITY.

---

CHRISTOPHER C. CAMPBELL,  
*Complainant, and Assignee in Trust,*

*versus*

THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK,

*Defendants, &c.*

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- 1869 Testimony taken on the part of the complainant in rebuttal under and pursuant to the 67th Rule of the Supreme Court of the United States as amended before John A. Shields, Esq., a standing examiner of said court, at the city of New York.

NEW YORK, December 15, 1879.

Present — Hon. Marcus P. Norton, Counsel for Complainant, and C. W. Betts, Esq., Counsel for Defendants.

- 1870 Continuation of rebuttal proofs for complainant.

Complainant's counsel offers in evidence a certified copy of letters-patent of the United States, dated June 12, 1860, No. 28,644, for improvement in pumps, granted to Nehemiah S. Bean of Manchester, N.H., extended to him by the Commissioner of Patents, on the eleventh day of June, 1874, which I ask the examiner to mark "Complainant's Exhibit, Bean No. 1, J. A. S., Ex'r. December 15, 1879."

Complainant's counsel offers in evidence a certified



1871 copy of letters-patent of the United States, granted on the application of Nehemiah S. Bean and J. G. Collins, but issued to the Amoskeag Manufacturing Company, July 3, 1860, No. 29,032, for improved steam-boiler, which I desire to be marked by the examiner, "Complainant's Exhibit, Bean No. 2, J. A. S., Ex'r. December 15, 1879."

Complainant's counsel next offers in evidence a certified copy of letters-patent of the United States, granted on the application of Nehemiah S. Bean, but issued to  
1872 the Amoskeag Manufacturing Company, and dated January 15, 1861, No. 31,138, for improvement in steam fire-engines.

Complainant's counsel states that the Patent Office having made a mistake in the certifying of this patent, it has been returned to the Commissioner of Patents to be corrected. On its return Complainant's counsel asks the examiner to mark the same as of to-day, "Complainant's Exhibit, Bean No. 3, J. A. S., Ex'r, December 15, 1879," when opportunity will be given  
1873 to defendants' counsel to object to it if he shall desire.

Hon. Marcus P. Norton, complainant's counsel, being duly sworn, deposes and says: —

Q. 1. State name, age, residence, and occupation.

A. Marcus P. Norton; I am fifty years of age; residence, city of Troy; occupation, a practising attorney-at-law.

Q. 2. Do you know James Knibbs of Troy, N.Y., on whose application the letters-patent upon which the bill in this suit is founded, dated May 24, 1864, No.  
1874 42,920, for improvement in pumps for steam fire-engines, was granted?

A. I do, and have known him for over twenty years past.

Q. 3. Do you know who acted as his attorney in the preparation of his application for the obtaining of the letters-patent named in the last question? and, if you do, state the same.

A. I do: it was myself.

Q. 4. State what you may know with reference to  
1875 the construction of complainant's Exhibit, J, Septem-

ber 30, 1878, J. A. S., Ex'r, now before you, and by whom it was made, when and where; and state also what you may know with reference to the construction of the model filed in the application for the obtaining of the letters-patent last above mentioned, by date and number, by whom made, when, and where.

A. This Exhibit, J, mentioned in the question, was made at the shop of Cyrus W. Sherwood, in the city of Troy, N.Y. My recollections as to time when it was  
 1876 made are in the fall of the year 1863, or the late winter of that year. I think that Mr. James Knibbs rendered some aid to Mr. Sherwood in its construction. There were two models of this precise description constructed at that time, and by the same person or persons. In all their essential parts they were substantially and materially the same. One of which was transmitted to the United States Patent Office, and there filed in the application by Mr. James Knibbs, on which the patent in this suit was granted, under date of May 24,  
 1877 1864, No. 42,920. The exhibit before me, and above referred to, has had, since the time of its original construction, two water-gates, or discharge-pipe connections, added to it. Those two are the outside ones that appear upon this model exhibit. Those were put there by Mr. Cyrus A. Sherwood, at my expense and request. This was done in the year 1874 or 1875, according to my present best recollections. Otherwise it is precisely as originally constructed. The suction rubber pipe and the discharge rubber pipe have been  
 1878 removed, having worn out: otherwise no change whatever in its construction has taken place. In every other respect the two models were identically the same.

Q. 5. State why it was that you had the two water discharge-gates, or discharging hose-pipe connections, added to this exhibit.

A. It was for the purpose of illustrating to the Court the application and connections of the discharging hose or pipes to the force or discharging chamber  
 1879 of the main water-pump of a steam fire-engine, and thus show its practical operation to the Court. About

that time there was a suit pending in the Northern District of New York, which was founded upon the same patent that this suit is.

Q. 6. State fully, if you know, why it was that Mr. James Knibbs did not apply for this patent at an earlier time than that in which he did apply for a patent.

Objected to as not in rebuttal.

- 1880 A. It was because of the advice which I gave him, as his attorney, with reference to that matter. Some time, either the last part of the year 1860 or the first part of the year 1861, Mr. James Knibbs came to my office in Troy, and showed me a drawing of a valve which he stated was of the kind and description that he had at that time on the steam fire-engine "Arba Reade," in the city of Troy, which he then denominated an automatic relief valve. He also explained to me the application of this valve to the suction and discharge chambers of the main water piston pump of that engine, and requested me to furnish the means necessary to obtain a patent upon that invention, and also to act as his attorney in reference to it, and requested that I should take an interest in the invention and patent, which I afterwards did. In reply to his request I stated to him, that, if he had a valuable invention which could be protected by letters-patent, I would furnish the means desired, and give the matter my professional attention. I then went with him to
- 1881 charge chambers of the main water piston pump of that engine, and requested me to furnish the means necessary to obtain a patent upon that invention, and also to act as his attorney in reference to it, and requested that I should take an interest in the invention and patent, which I afterwards did. In reply to his request I stated to him, that, if he had a valuable invention which could be protected by letters-patent, I would furnish the means desired, and give the matter my professional attention. I then went with him to
- 1882 the steam fire-engine "Arba Reade" house, in the city of Troy; and he there exhibited to me the device that was then on that engine, which he said was his invention. I asked Mr. Knibbs if he had sufficiently experimented with that device and its connections, so that he was satisfied that his invention was a success beyond any question of doubt. He replied by saying, substantially, that he was not fully satisfied with it, and yet he thought the invention was there. I said to Mr. Knibbs, that, before I expended any money in the mat-
- 1883 ter, he must have succeeded by experiments in perfecting the invention so as to make it a perfect success, and that when that was done, I would be ready to

assist him to means, and all that was necessary to obtain the patent, and introduce it into general use. As his attorney on that occasion, I advised him, that, as a matter of law, he had the right to use his invention on that engine, or to sell it to others to use on steam fire-engines for a period not to exceed two years from the date of his last experiment to the date of his ap-  
 1884 plication in the Patent Office for a patent on that device.

One modification of that invention, and the invention which he then showed to me, is contained in the model, complainant's Exhibit, J, September 30, 1878, J. A. S., Ex'r, now before me; and I have here with me the identical drawing of the valve which he showed me at the time of his first interview with me about his invention, which he denominated an automatic relief valve, as I have before stated. I am enabled to state  
 1885 that it is the identical one from the fact of its general appearance, and the color of paper on which it is drawn. Of course I only give my present best recollections as to that matter, and from the further fact that it has been in my possession nearly all the time since. I believe it to be the identical one, as I have no reason whatever to doubt that fact. I offer it in evidence as a part of my answer to the question, and ask the examiner to mark it "Complainant's Exhibit, Norton original drawing, December 15, 1879. J. A. S., Ex'r."

1886 The same objection as to the question, and also as not responsive. The same objection to the Exhibit.

Q. 7. State, if you know, why the automatic portion, of the valve, shown by complainants' Exhibit, Norton, original drawing, December 15, 1879, J. A. S., Ex'r., was not put upon the model that was filed in the Patent Office, in which the patent in suit was granted by the date and number stated in the Bill of Complaint in this cause. State fully about it.

A. The reason why that portion was not put upon  
 1887 that model is this: It was found to be expensive to apply it to a model of the size of complainant's Exhibit, J, now before me. Mr. Knibbs desired to have it put upon a separate model of the valve and its con-

- nections, as an adjunct to the model that was filed in the Patent Office. As his attorney, I advised him that in my opinion it was wholly unnecessary to do that, from the fact, that, if he obtained a valid patent upon the invention which he had described to me, and which he had shown to me in an experimental condition upon the steam fire-engine "Arba Reade," he would have the right in law to operate that device in any manner or by any means that he might deem best, and found to be practical in his experiments upon that steam fire-engine, which I have before referred to; and that, should any one afterwards obtain a patent for operating his invention, it could not in law be enforced without first paying tribute to his patent as the foundation patent, underlying the whole invention, and therefore it would be unnecessary to go to that expense or
- 1888 trouble about that part of it. An automatic valve of the description shown by the drawing, complainant's Exhibit, Norton, original drawing, and made, I believe, from this drawing, is now in use in the old "Arba Reade" steam fire-engine, in the city of Troy, and has been on that engine so in use since 1861 or 1862, I think. I am only giving my best recollections as to dates, having no memorandums of those before me. The original device that I now refer to was produced in this cause by the witness Knibbs on his cross-examination by Mr. F. H. Betts, and was by him introduced as
- 1890 an exhibit, on the part of the defendants, I believe. The records, however, will show.

Answer objected to as to the experimental condition of the device on "The Arba Reade" as hearsay only, and the same objection is now taken to the answer to the previous question, No. 6; the said answer giving evidence only of what was said to the witness, and not of any facts material to this issue.

- Q. 8. State whether you have in your possession
- 1891 any of the exhibits that were used or filed, either by the complainants or by the defendants, in the case of Knibbs, Tupper, and Norton, against Button and Button, in the Circuit Court of the United States in the Northern District of New York; and, if you have, state

what they are, if you know, and produce them in evidence in this cause.

1892 A. I have two before me: one was filed in that cause May 4, 1875, before John T. Lamport, Ex'r. It is a true and correct copy of memorandum of agreement between the Amoskeag Manufacturing Company of Manchester, N.H., and "The Arba Reade" steam fire-engine company No. 1, of the city of Troy. It is dated December 14, 1859, signed E. A. Straw, agent, on one part, and by N. B. Starbuck and L. L. Southwick on the other part. The original agreement I have seen, and compared this with it. The word Reade is spelled in this agreement Reed; which way is correct I am unable to state in the spelling of that word as applied to that engine. I here offer it in evidence as a  
1893 part of this answer, and ask the examiner to mark it as "Arba Reade" Agreement, J. A. S., Ex'r., December 15, 1879."

I also have another exhibit, that was filed in the cause above referred to, which is headed "Public Ledger and Daily Transcript," Philadelphia, Wednesday, June 30, 1858," which I now offer in evidence in this cause, and ask the examiner to mark it Exhibit, Public Ledger, J. A. S., Ex'r., December 15, 1879."

1894 This exhibit was offered in evidence in the cause above referred to, during the examination of the witness Joseph L. Perry, and it is a part of his evidence given by him in that cause, and it was introduced and filed as such exhibit, after his answer to direct Q. No. 10, and is also mentioned in Mr. Perry's answer to that question.

Q. 9. State how these exhibits came into your possession.

1895 A. Not long ago I wrote to The Troy Times Publishing House to send to me all the exhibits which had been taken to that house by me to be printed in the Button suit, that I have before referred to, and among the exhibits received by me in answer to that communication were the two described in the last answer.

Q. 10. State, if you know, where the Lithograph

and Photograph Exhibits that were filed in that case, on the part of the defendants, as exhibits and as their evidence during the examination of the witness, Joseph L. Perry, and also a witness by the name of Rankin, 1896 now are.

A. I do not; and the last time I saw them, which was some years ago, they were in the office of the examiner, John T. Lamport, in Troy, N.Y.

Q. 11. State whether, within the last month or so, you have taken measures to ascertain the whereabouts of those exhibits, and, if so, what you did with reference thereto, and the success, if any, attending the same.

A. Since I stipulated with Mr. Betts, that the evi- 1897 dence rendered by Joseph L. Perry and the Mr. Rankin, witnesses in the Button case, to which I have referred, and who reside at the city of Philadelphia, and which was then in print in that cause, I both wrote a letter by mail, and on the next day sent a telegram, to the examiner, Mr. John T. Lamport, at Troy, to send to the care of defendants' counsel, Mr. Betts, those exhibits and all others in that case filed by him as examiner, and in his possession. He answered me, both by letter and telegram, that no exhibits could be 1898 found in his office in that case, and which I had written and telegraphed him about. I thereupon wrote a letter to Mr. C. A. Waldron, who was the solicitor for the defendants in that cause; and, not receiving a reply from him, I then wrote a letter to Mr. L'Amoreaux, who resides at Ballston Spa, N.Y., who was counsel for the defendants in that cause. And under date of December 6, 1879, he answered me by letter; and that letter and the envelope in which it came I now offer in evidence as a part of this answer, and ask 1899 the examiner to mark them "Complainant's Exhibit, L'Amoreaux, J. A. S., Ex'r, December 15, 1879."

About the same time that I wrote to Mr. L'Amoreaux, I wrote a letter to Mr. H. O'R. Tucker, one of the proprietors of the Troy Times Printing House, making further inquiries after the exhibits that were put in on the part of the defendants in the Button suit

above referred to; and on the 8th of December, 1879, I received an answer by mail which I now offer as a part of this answer, and ask the examiner to mark the  
 1900 letter and the envelope in which it came, "Complainant's Exhibit, 'Troy Daily Times,'" both it and the envelope. It is so marked "J. A. S., Ex'r., December 15, 1879."

The letter and telegram which I received from Mr. Lamport in answer to mine, I enclosed in my letter to Mr. L'Amoreaux; and I suppose those are with him at this time.

The lithograph Exhibit Philadelphia Engine No. 1, that was filed in the said Button case by the defend-  
 1901 ants, and as a part of their evidence, I do not know at this present where it is; but am anxious to know, and to have it produced by the defendants in this cause: and as to the photograph defendants' Exhibit No. 2, in the said Button case, I have the same remarks to make as my answer about it and its whereabouts as I have made with reference to lithograph Exhibit Philadelphia No. 1, introduced, as before stated, in the direct examination of the witness Joseph L. Perry, by the defendants.

1902 Q. 12. State whether the several matters of which and about which you have testified on this direct examination, you have information or knowledge personally?

Objected to as indefinite, and not referring to the particular matters intended.

A. I have, and it is with reference to each and every subject-matter of which and about which I have given testimony in this direct examination.

Complainant's counsel requests the examiner to erase  
 1903 by pen and ink the sentence or paragraph in the letter Complainant's Exhibit, "Troy Daily Times," December 15, 1879, J. A. S., Ex'r, commencing with the word "hoping" and ending with the word "favor."

Defendants' counsel objects to the mutilation of any exhibit, and informs the examiner that he has no right without the consent of counsel on both sides to make any erasures. He requests the examiner, in case he shall



see fit to strike out the paragraph related, to give in full upon the record all the words that he erases, so  
 1904 that the Court may know what this exhibit was before its mutilation.

Under the objections of defendants' counsel, complainant's counsel withdraws the request first above made.

Q. 13. State the number of exhibits, and give the name of each that were introduced on the direct examination of the witness Joseph L. Perry, in the Button suit above referred to.

A. There were four; namely, Defendants' Exhibit  
 1905 No. 1, which was a lithograph of a steam fire-engine by the name of "Philadelphia," and introduced after the answer to direct Q. No. 4. The next was Defendants' Exhibit No. 2, which was also a lithograph of a steam fire-engine by the name of "Hibernid," and was introduced after the answer to direct Q. No. 5. The first lithograph is referred to in the answer to direct Q. No. 4. The other lithograph is referred to in the answer to direct Q. No. 5. These are the two lithograph exhibits which were a part of that evidence, and are  
 1906 not in evidence in this cause. The next was Exhibit No. 3, defendants', which is mentioned in the answer to direct Q. 10, and offered in evidence just after that answer, and is known as "Public Ledger and Daily Transcript," and which has been offered in evidence during my examination to-day. The next is Exhibit No. 4, defendants'. That was a photograph of a steam fire-engine called "The Hibernid." It is mentioned in the answer to direct Q. No. 11, and was offered in evidence in that cause just after that answer. It is not in  
 1907 evidence in this cause.

Q. 14. State how many exhibits were offered in evidence during the cross-examination of the witness Joseph L. Perry, in the Button suit above referred to; what they were, if you know, and at what particular point they were so offered.

A. There was one marked "Exhibit O, Complainants," which was a photograph showing the working parts of engines, with cross-heads and connecting rods,

referred to in the answer to  $\times$  Q. 50, and referred  
 1908 to in  $\times$  Q. 51, and was offered in evidence just after  
 the answer to that question. The next was Complain-  
 ant's Exhibit P, referred to in Re-cross. Q. 274 and  
 275, and offered in evidence just after the answer to  
 Re-cross Q. 275, and it is printed in *extenso* just be-  
 fore the answer to that question, and the paper is also  
 referred to upon that record by both counsel; namely,  
 for the complainants and for the defendants.

Upon examination of the printed record of the wit-  
 ness, Joseph L. Perry, I do not find the exhibit which  
 1909 I have caused the examiner to mark "'Arba Reade'  
 Agreement, J. A. S., Ex'r., December 15, 1879." I  
 now think that that exhibit was offered in evidence  
 during the examination of another witness in that  
 cause, and not during the examination of either of  
 the Philadelphia witnesses. The witness, Rankin,  
 whom I have mentioned during this examination, — his  
 full name is Alex. M. Rankin, — and was examined in  
 that cause next after the witness Joseph L. Perry.

Q. 15. State, if you know, what counsel attended  
 1910 the direct and the cross-examinations of those two wit-  
 nesses in that cause.

A. C. A. Waldron, defendants' solicitor, residing at  
 Waterford, Saratoga County, N.Y., and J. R. L'Amo-  
 reaux, of counsel for the defendants, and residing at  
 Ballston Spa, Saratoga County, N.Y., attended and con-  
 ducted the proceedings on the part of the defendants.  
 I, myself, attended and conducted the proceedings on  
 the part of the complainants, and personally cross-  
 examined each of those two witnesses.

1911

*Cross-examined by MR. BETTS.*

$\times$  Q. 16. All the above questions which you have  
 answered were propounded by yourself, were they  
 not?

A. The record shows that to be so, and without  
 objection in that respect.

$\times$  Q. 17. Where did you first see the relief valve  
 on "Arba Reade"?

A. The one that I have testified about I first saw  
 1912 in the fall of 1860, I think September.

× Q. 18. You are sure about that, are you?

A. I do not think I am mistaken about it. I have given my best recollections of it, and believe that I am correct in that statement.

× Q. 19. Is the drawing, "Complainant's Exhibit," original drawing, a correct representation of the relief valve as you then saw it on "The Arba Reade"? If not, in what respects does it differ?

A. The valve at the lower end marked with bevel  
 1913 lines on either side, and the stem to which it is attached at the lower end, and the coil-spring surrounding that stem commencing at its lower end and extending upward, with a cylinder or sleeve surrounding both the stem and coil-spring and the screw-box with surrounding screw-threads and corresponding nuts, so as to adjust the tension of this surrounding coil-spring, are essentially and substantially the same; so, too, the surrounding box at the lower end near the conical-shaped valve, showing a vertical recess to allow this  
 1914 conical valve to open from the valve-seat by water-pressure, and then to be returned to that valve-seat by the surrounding coil-spring when the water-pressure is less than the strength, or tension, of that spring, also essentially and substantially the same; and they all may be seen upon the steam fire-engine "Arba Reade" at Troy, N.Y.

× Q. 20. The relief valve now upon "The Arba Reade," and which was produced by the witness, James Knibbs, in this cause, is, then, the original valve  
 1915 which you saw, as you have testified, is it?

A. No: I don't say that. That one that is now on "The Arba Reade," my impression is, was put there some time in 1862 or 1863, or it may be the very last part of 1861. I can't say positively about that. Mr. Knibbs would know more about that than I. My impression is that the first one I saw in 1860 was simply operated by hand.

× Q. 21. What was the application of this valve which you first saw on "The Arba Reade"? and what  
 1916 were its connections which enabled it to act as a relief?

A. It was substantially the same as that which is

shown in Complainant's Exhibit J, September 30, 1878, J. A. S., Ex'r.; and its connections were the connecting of the force or discharging chamber to the suction or supplying chamber of the main water-pump, having a piston or plunger chamber between them, and receiving and discharging valves in connection with those three chambers; namely, first, the piston chamber; second, the supply or suction chamber; and, 1917 third, the force or discharging chamber; and those chambers were connected substantially as shown in the exhibit that I have referred to in this answer, and the regulating valve open from and closed against the end of the pipe, or water passageway, between those chambers, substantially shown in this same exhibit.

× Q. 22. What do you mean when you say these chambers were connected substantially the same way as in the exhibit?

A. I mean by that, that there was a water passage- 1918 way leading from the force side to the suction side of the piston or force pump, by means of a pipe, shown in that exhibit, into one end of which, namely, that end terminating in the suction-chamber, there was a regulating valve like, or substantially like, the one that is shown in this exhibit, which was for the purpose of relieving the pressure or discharging side of the main water piston-pump from excessive water-pressure by allowing that excess to be conducted back and into the suction part, which was done by the means of opening 1919 or closing the regulating valve that I have described.

× Q. 23. When was the specification of the patent now in controversy drawn?

A. I think it was in the early part of 1864. It was sworn to me the twenty-seventh day of April, 1864, and it was signed by Mr. Knibbs on the twenty-seventh day of April, 1864, being the same day that it was sworn to.

× Q. 25. Are you the Marcus P. Norton to whom that patent was issued?

1920 A. I am, in connection with Mr. Knibbs, the inventor. That is, it was issued to James Knibbs and Marcus P. Norton, assignee in connection with Mr.

Knibbs, assignee to himself before the issue of the patent.

× Q. 25. When did you first see a relief valve which consisted of a valve closing upon a valve-seat in the partition between the discharge and suction sides of a piston-pump?

A. I think it was in the fall of 1861.

1921 × Q. 26. What engine was it on?

A. No engine to my knowledge, at that time.

× Q. 27. What pump was it on?

A. It was a drawing and a model, no pump in particular.

× Q. 28. When did you first see "The J. C. Os-good" with such a relief valve upon it?

A. Soon after that engine was delivered to the city of Troy by the Amoskeag Manufacturing Company, either in the winter or spring of 1862. It was in connection with that engine that I first saw the device referred to in the last previous question.

1922 × Q. 29. How long after you first saw the automatic relief valve upon "The Arba Reade" was it before you saw another automatic relief?

A. I don't know that I ever saw any until I saw one on the steam fire-engines in New York City, such as complainant's Exhibit K, and K No. 2, September 30, 1878, J. A. S., Ex'r., and that was, I think, in the spring of 1877, at the time when I was making preparation to bring this suit against the city of New York. I have no recollection of seeing any other between those times.

1923 × Q. 30. Do you wish the Court to understand that you did not consider it worth while to put into the specification of the patent now in controversy, and granted to yourself and Knibbs, any claim to the spiral spring or other mechanism which enabled the valve to act automatically?

A. Those specifications were prepared by the chief clerk in my law office in Troy; and my impressions now are, that, in his conferences with me on the subject, I advised him that it was better not to describe any particular means for operating that valve so long as the

purposes and the functions of that valve and its connections were clearly stated. Therefore, I wish the Court to understand that it was my opinion then, and still is, that it was not necessary to either describe or claim the spiral spring in the manner referred to in the question, as the inventor would be entitled to any kind  
 1925 of mechanism for opening or closing that valve under water-pressure. In the specifications and claims of the patent in suit, it is denominated a "regulating valve." The term "regulating" would, in my opinion, imply the use of any suitable mechanism for opening or closing that valve under water-pressure in the pressure chamber of a main water piston-pump of an engine, for throwing or spurting water upon a fire. I then approved of that plan, and still think it was a correct course to pursue in reference to that matter.

1926   × Q. 31. Where are now the model and drawing which you say you saw in connection with the relief valve in "The J. C. Osgood"?

A. Those were shown to me by Mr. James Knibbs in my office in Troy; and they were, if I remember correctly, a rough sketch and a rough model made by him: and I don't know what has become of them.

× Q. 32. What connection did this drawing and model have with "The J. C. Osgood"?

A. My impressions are that the city of Troy were  
 1927 about entering into a contract to build that engine, and Mr. Knibbs thought it was best to have put upon it his invention in that modified form; and he came to consult with me about it, being at that time engaged in experimenting with that invention, and being about to apply for his patent, as the device stood upon "The Arba Reade." I advised him that he had better wait until his invention in that form had been tested upon that engine; and it was in this connection that he gave me the rough sketches and the rough model that I have  
 1928 spoken of, so that I might understand the application. That engine came to Troy, as Mr. Nehemiah S. Bean testified in this cause, some time in January, 1862.

The answer objected to by defendants' counsel as irresponsible and hearsay, so far as it relates to the alleged experiments of James Knibbs.

× Q. 33. What interest have you now in the patent in controversy herein?

A. All that interest shown by the transfers that are given in evidence in this cause as exhibits, and which  
 1929 are also attached to the Bill of Complaint as exhibits. Upon reading those you will find precisely what my interests are. They are no more nor no less than as there stated.

× Q. 34. State, if you please, in your own words, just what your interest is in that patent.

A. That I must decline to do, so long as there is higher and better evidence of the fact; namely, the several transfers that I have referred to in my last  
 1930 answer, which are on record in the United States Patent Office, and in evidence in this cause; and I believe they are so written, and the matter inquired about so clearly stated, that the Court will have no difficulty whatever in coming to correct conclusions upon that matter, if it be at all material as to any of the issues involved in this cause: and I have already fully answered your inquiry in the best way known to me.

× Q. 35. Which of those transfers is the one which contains a statement of the present interest of yourself or others, in that patent?

A. According to my best recollections now, each and  
 1931 every one of them will show conclusive evidence as to that matter. Therefore I cannot refer to any particular one; but, if you will take the trouble to read them understandingly, I think you will have no occasion to further trouble yourself on that subject. Again, for the third time, I tell you that I have given you full and truthful answers to the inquiry. If, however, you wish to know my opinion as to who I think ought to recover in this suit, I can give you that.

× Q. 36. It is because I wish to know whether there  
 1932 is any thing relating to the title to this patent which is not contained in the documents in evidence, or which is implied or understood between the parties to those documents outside of the language, that I now make this inquiry; and I therefore ask you again to state exactly what is the interest expressed or implied or

understood of every one who has any interest in the letters-patent now in controversy.

1933 A. The Bill of Complaint in this cause clearly and distinctly sets out and describes the title and ownership of this patent. The answer to that complaint admits that title to be correct and true. There being no issue in this cause on the question of title or ownership, I must ask you for what purpose or purposes you make the inquiry contained in the first part of your last question.

1934 To the last point of your inquiry in that question, I return to you the same answer that I have returned to all your inquiries on that subject; and, again, if you wish to know my opinion as to who ought to recover in this suit upon the whole evidence, and the law relating thereto, I will give that opinion without compensation, although I very much dislike to do so. And I further answer by saying that, if you are laboring under the idea that I have any interest or prejudices that would disqualify me from telling the truth, the whole truth, and nothing but the truth, in this examination, you are greatly mistaken. Did I own the whole patent, and were I the complainant in this cause, I should have  
1935 gone upon the witness-stand, and, being sworn as a witness, would have testified to every matter and thing as I have to-day testified, and then leave the matter for the Court to determine whether, under those circumstances, it ought, or ought not, to receive my testimony; would, under those circumstances, as I now do, leave the Court to judge for itself on my direct and cross examination in connection with the other evidence in this case, — form its own opinion as to the truthfulness or untruthfulness of my evidence.

1936 X Q. 37. It is that the Court, and not yourself, may be the judge in that matter, that I now repeat this inquiry, and ask you again to state exactly what is your interest in the patent now in controversy.

A. In so far as the Court is concerned I agree with you; and as the pleadings and the evidence on both sides as to the title and ownership of this patent are already in the case, and as I have already repeatedly answered



the inquiry, I have no further or additional answer to make, and shall make none different were you to put  
 1937 the same question a thousand times again.

× Q. 38. Have you any idea of any means by which trace can be obtained of the missing exhibits in the suit of Knibbs against Button?

A. I think so. I may be mistaken about it, however. I think if you will write to Joseph L. Perry of Philadelphia, or to Lysander Button & Son of Waterford, N.Y., or to C. A. Waldron, Mr. Button's solicitor in the suit referred to, or to Mr. J. S. L'Amoreaux of Ballston Spa, N.Y., Mr. Button's counsel in that  
 1938 cause, or to John T. Lamport of Troy, N.Y., the examiner before whom the testimony was taken, and if those persons, or either of them, will treat you fairly, I know of no reason why you may not only obtain a trace of them, but to get actual possession of the genuine exhibits. I have endeavored with great care and particularity to trace and to obtain them, and have failed; and I now think it an outrage and a wrong that I cannot trace them and obtain them, inasmuch as you fail to do so before the closing of your case in evidence.  
 1939 I shall make further effort before I close complainant's rebuttal proofs to obtain those exhibits, and to bring them into this case as a part of the evidence which I stipulated with you should be read and considered by the Court precisely the same as though it had been taken in this cause for this suit.

× Q. 39. Look at the paper which I now hand you, and which I offer in evidence, and request the examiner to mark "Defendants' Exhibit Norton," and which is entitled "order of the Commissioner of Patents refusing to recognize Marcus P. Norton as a patent agent,"  
 1940 and state whether, or not, you are the Marcus P. Norton named in that paper, and whether, or not, said paper contains a correct account of the charges and proceedings in the Patent Office relating to the matter therein described, and a correct copy of the judgment rendered in those proceedings; and, if not, state in what respects it is erroneous.

A. I have examined the paper referred to in the

- question. The paper which I now hold in my hand  
 1941 does not state the whole truth as to the proceedings  
 there referred to. Every matter contained in it, to-  
 gether with the specification of charges, are false and  
 fraudulent in every particular. The whole matter  
 stated there is the result of what I believe to be a cor-  
 rupt and wicked conspiracy entered into against me at  
 about the date of this paper, by the following named  
 persons: to wit, one Jeremiah D. Green, and Frederick  
 G. Ransford and Peter Low, then of the city of Troy,  
 N.Y., and one Thomas J. W. Robertson, and Frederick  
 1942 H. Betts, his attorney, residing at the city of New  
 York, and of one M. D. Leggett, Commissioner of  
 Patents of the United States, who instituted these pro-  
 ceedings in the Patent Office, appointed a commission  
 from three of his examiners who were depending upon  
 him for their subsistence, who sent out and took *ex parte*  
 affidavits of some of the persons whom I have named,  
 refusing thereafter to give me the right to cross-examine  
 those scoundrels and conspirators, but also refused to  
 allow me the opportunity to disprove such and every  
 1943 charge made by those conspirators against me, before  
 this chief of public sinners; and when I had moved the  
 commission for leave to offer evidence and cross-examine  
 Mr. Leggett's witnesses in the presence of a large num-  
 ber of persons in an argument of mine occupying more  
 than two hours in its delivery, which was mentioned in  
 the despatches to "The New York Tribunal" at the  
 time, my motion so made and publicly argued in the  
 Patent Office on the 17th of September, 1871, was not  
 only never decided by that commission, but on the next  
 1944 day that commission, appointed without the authority of  
 law, made up of the servants of this man, M. D. Leggett,  
 made and filed a paper dated September 18, 1871, con-  
 taining eight charges, each and every one of which are  
 false and corruptly wicked in every particular; and, had  
 I been permitted to have made a defence in that matter  
 by the examination of witnesses in my behalf, and the  
 cross-examination of those whose *ex parte* affidavits had  
 been unlawfully received and filed by M. D. Leggett,  
 Commissioner of Patents, I could and would have

1945 successfully controverted and utterly destroyed every charge without exception made against me in this paper referred to in the question.

I have on two occasions in court before this heard of this same document. In the first case to which I refer, I did not know that it was there until I read the decision of the Court, Mr. Justice Blatchford. That case was the suit of Thomas J. W. Robertson, complainant against the Secomb Manufacturing Company, defendants. Mr. Frederick H. Betts, counsel in this case,

1946 was the solicitor or counsel in *that* case.

Judge Blatchford in that cause pronounced upon me very severe and very unjust censure as a witness, for which I have never had one unkind feeling or sentiment of disrespect because he had done so; for I was well satisfied that he had been misled and deceived by one of those persons whom I have reluctantly denominated a conspirator against me. I come to the conclusion as to those persons being conspirators, from the evidence, and their own conduct in relation to the matter involved

1947 in the question.

That matter, as presented before Judge Blatchford, was *ex parte*, and I had no opportunity to refute in that suit these wicked and damnable charges against me, and therefore it is difficult for me to see how it is that Judge Blatchford could do otherwise than he did in that opinion. I do not blame him, but have always been deeply sorrowful that he was drawn into that matter in the manner in which he was. Since then I have had quite a large practice in his court before him, and he has always treated me kindly and with all the consideration I could ask for or desire.

1948

The other case in which I have seen this same subject-matter and in the same form, is the case of Christopher C. Campbell against Thomas L. James, postmaster in this city, and Charles Eddy, defendants. In that case I met this infamous document fairly and squarely on its face with evidence in that cause. That cause was tried before Judge Hoyt H. Wheeler, and to his opinion in that case I point with great satisfaction and good

1949 cheer as a full vindication of this foul slander and libel

against me upon the public record. The result of the conspiracies of which I have spoken, I may say here that there is no person or persons in this country, or elsewhere, who know me and who truly know my character of a life now fifty years past, and not an open or covert enemy of mine, would or do believe a single word of charges uttered or expressed in this libel; and I have further to say at this point that since then I have frequently been examined as a witness in causes in  
 1950 the courts of the State, and also of the United States, and my testimony has always been received, and credit given to it, the same as that of any other respectable and truthful witness.

I have still further to say, that, since Mr. Leggett resigned the office of Commissioner of Patents, I have had no trouble or hinderance in the transaction of such business as I had to do from time to time in the United States Patent Office. I have transacted business in the Patent Office with Mr. Ellis Spear, while he was  
 1951 Commissioner of Patents. Mr. Spear, to whom I refer, is the same Spear whose name is appended to one of the commissions, who signed the finding of September 18, 1871; and during that time he never objected to my transacting business with him as Commissioner of Patents.

While the firm to which Mr. F. H. Betts and Mr. C. Wyllys Betts belong shall be in existence, or while either of those gentlemen may survive, and in any suit where I may be called as a witness with which those  
 1952 gentlemen, or either of them, may be connected as solicitor, or counsel, I shall expect to be compelled to encounter this infamous document printed by the Government without the authority of law, and believed by everybody who knows the facts to be a cowardly libel.

Adjourned by consent of counsel until to-morrow,  
 1958 Tuesday, December 16, 1879, at 10.30 o'clock, A.M.

NEW YORK, December 16, 1879,  
10.30 o'clock, A.M.

Present — Counsel as before.

*Cross-Examination of HON. MARCUS P. NORTON, continued by C. W. BETTS, Esq.*

1954 X Q. 40. Soon after, or about the time of the so-called infamous and malicious proceedings in the Patent Office, you were indicted for forgery, were you not?

1955 A. The proceedings referred to in this printed circular took place in the month of September during the time that Mr. Frederick H. Betts, counsel in this case, was managing and procuring the extension of a patent before Commissioner Leggett, which had been granted on revolving dating type, bearing date the twenty-second day of September, 1857, which contained the identical invention which two years previous had been plainly and distinctly described in a caveat filed by me  
1956 in the Patent Office, I think in June, 1855. At about that time I had an application in the Patent Office for a re-issue of a patent, granted to me on the fourteenth day of January, 1862, the application of which was founded upon this caveat of 1855, and of two intervening applications for a patent, one of which was made in October, 1857, the other in the spring of the year 1859. My re-issue application of the patent of January 14, 1862, being then on the files in the Patent Office, I demanded of the Commissioner of Patents an  
1957 interference case with the patent of Mr. Robertson of September 22, 1857. This Mr. Robertson was at that time, and since then has been, a client of Mr. Frederick H. Betts, counsel in this case; and this Mr. Betts was also at that time conducting the proceedings for an extension of this Robertson patent for a new term of seven years.

To the extension of that patent I objected, and filed my objections in writing in the Patent Office. The testimony on both sides was at that time nearly completed.  
1957 The time that I now refer to is the first part of the month of August, 1871. My application for a

- re-issue of my patent, which contained the exact invention described and claimed in the Robertson patent, and which I had previously in the other two applications, demanded an interference case with the Robertson patent, was examined by an assistant examiner in the department to which it belonged, in the absence of the principal examiner. This assistant examiner in that examination wrote me an official letter stating that
- 1958 the title to the patent and invention contained in this re-issue application belonged to the owners of my patent of August 9, 1859, in which the revolving dating type fully appeared. In my reply to that letter I informed that examiner that his conclusions on that subject were not correct in point of fact; that if he would examine the original file on which the patent of January 14, 1862, was issued, he would find in that file an agreement between the owners of the patent of 1859 and myself, by which I had obtained their assent
- 1959 to apply for the patent of January 14, 1862, the invention in which had been eliminated from the application of 1859, and that it was upon that paper so filed that the patent of January 14, 1862, was issued, but for which the examiner at that time would have raised the same question then raised by this last examiner in the re-issue application. Upon the examination of the files of the patent of January 14, 1862, no paper of the kind I had stated was found. I stated to him that I would file a copy of that paper that was in that
- 1960 file for the re-issue. I sent for the copy, and, upon receiving it, I made a clear, fresh copy upon clean, white paper. I made an affidavit that that paper was a copy of the original paper that had been filed in the application for the patent of January 14, 1862. I took that paper on the same day that I had finished making it from the copy that I had of the original, and with it, and my affidavit about it in which I stated that it was a copy, I went to the Patent Office, and paid the fees upon those papers for recording them. They were
- 1961 separate papers. They went to the assignment-room, being taken by myself there by the permission of the chief clerk of the Patent Office, to Mr. Wilson, clerk

in charge of the Assignment Department, who promised to have this copy paper put on record that day so I could use it in the re-issue application on the next day. He refused to record the affidavit, saying that such papers had been prohibited, by a rule, from being entered of record in the Patent Office. I left the copy paper to be recorded as promised.

1962 That paper was, every word of it, in my own handwriting, signatures and all. The ink upon it was perfectly fresh, and not fully set in its color. The paper, as I have before stated, was clean, new, white paper, like this on which the examiner is now writing. It being but recently folded, when released from the rubber band that was around it, it would spring open and spread out just as any newly folded paper will do at first.

The date of that paper related back to some time in  
1963 the year 1860, I think. There was no internal revenue stamp upon it, as was then required by law on all genuine instruments of that time, namely, 1871. The inquiry as to the necessity of such a revenue stamp being put on that paper before allowing it to be recorded, came up between myself and Mr. Wilson. Mr. Wilson held as his opinion that that paper being but a copy of an original one bearing date before the passage of the stamp duty Act of Congress, it did not need such internal revenue stamp. For offering to re-  
1964 cord a paper of this description, and under the circumstances which I have stated in this answer, the same band of conspirators to which I have referred in my last answer, or some one or more of them, procured an indictment against me by the Grand Jury of the District of Columbia.

On the same day that I learned of this indictment I went to Washington, and immediately went to the district-attorney's office on the Monday following my arrival there, to inquire about this indictment. I saw  
1965 the district-attorney, Mr. Fisher, and asked him about it. He told me that he knew of no such indictment, and thought I must have been misinformed on that subject. After a few minutes' conversation with him

on other subjects, he being a personal friend of mine, I was about leaving him, when he suggested that perhaps I had better call upon the assistant district-attorney, a man by the name of Harrington. I then found that there was an indictment against me for doing just what I have stated in this answer I did do, and  
 1966 nothing more. He went with me to the clerk's office of the court where the indictment was, so that I might read it and see what it was. After reading it, I said to him I would procure bail during that day if he would have the Court fix the amount of the bail. He said that I was then in custody, and would not be allowed to go out for bail. The officer took me to the jail in the District of Columbia for the great crime that I have stated in this answer. While there I procured bail in the sum of three thousand dollars. This was in Jan-  
 1967 uary, 1872. From that time till now I have been unable to obtain a trial upon that indictment, having in writing and verbally demanded a trial upon it. I never in my life committed a forgery of any kind, name, or description. The only mistake I made in the matter to which I have referred was in not writing across the face of the paper that I had offered for record, the words "*a copy.*"

This assistant district-attorney Harrington, not long after this time, was once or more times indicted while  
 1968 in office, or just after his resignation, by the Grand Jury of the District of Columbia, for various serious crimes, amounting, if I am not mistaken, to a felony. If not mistaken, he is now a refugee from justice in this or foreign lands, and is known to be a corrupt, bad man.

This same indictment business was brought out in the Robertson and Secomb case, either by the present cross-examining counsel, or his brother, Mr. Frederick H. Betts, counsel in this case. In that case I knew  
 1969 nothing of it, until, after reading Judge Blatchford's opinion, I examined the files in that suit in this court. This same indictment again appeared in this court against me as a witness in the case of Christopher C. Campbell against Thomas L. James, postmaster of



this city, and Charles Eddy, defendants; and, notwithstanding it and the printed paper introduced by the last previous question, I have no doubt but that my testimony was received by Judge Wheeler, and received the same consideration by him as he would give  
 1970 to any other witness. I judge this from reading his opinion in that suit, as I have no other means of knowing any thing on that subject. The indictment referred to in the question is a fraud, a falsehood, full of lying tales, void of truth, and an infamous, wicked, corrupt libel, precisely the same as is the printed paper referred to in the last question and my answer to it.

Inasmuch as this question has been put to me, either to insult or dishonor me, I will take this occasion to state that, notwithstanding these two infamous, libel-  
 1971 lous documents, my professional business has been extensive and prosperous in various parts of this country, by means of which I earned and deposited in the National State Bank in the city of Troy about five hundred thousand dollars after the commencement of my account with that bank in 1863 or 1864; and my professional business at the present time is so extensive that during the past four or five years I have refused many cases for want of time to attend to them. At  
 1972 the present time I know of nobody, excepting the counsel for the defendants in this cause, the Mr. Betts, Jeremiah D. Green, Frederick G. Ransford, Peter Low, and Charles Eddy, and it may be possible the district-attorney for the Southern District of New York, where these documents, or either of them have ever done me any injury. How it will be in this case I shall wait for the development by time; and, if I find that any injury has been done by the uttering and publishing of those two libels in this case, I may feel myself called upon to pursue that course toward those that have uttered  
 1973 and published them, open to me by the law, — and yet the mud machine through which they are thrown seems to me to be entirely unworthy of consideration: and I will here further say that I am ready now by counsel to be tried at any time upon the alleged indictment referred to by the question, and have been during

any time since the month of January, 1872, a period of more than seven years.

The affidavit which I have mentioned in this answer, and in which I stated that the paper which I have  
 1974 described was a copy paper, is now on file in this court, in the case of Campbell against James and Eddy, and I will produce it from these records at the hearing of this cause, as I will also a letter written by myself to the Commissioner of Patents on the same subject, dated, as I now remember it, the 23d August, 1871, in which letter I stated to the commissioner that the paper above described was only a copy; and I also clearly stated in that letter the reasons why I had put, as I then supposed, this first paper on the Patent Office  
 1975 record. In this same letter I also demanded an interference case with this same T. J. W. Robertson's patent. That letter is also on file in this court in the case of Campbell against James and Eddy, and on the day of its date, that being the day in which I was promised by Mr. Wilson to have returned to me recorded the paper which I have above described. On going to the Patent Office that morning I called upon Mr. Wilson, to get that paper, and was informed by him that I must see the Commissioner of Patents, Mr.  
 1976 Leggett, about it. The reception of this letter was refused on that morning by the Patent Office in the re-issued case to which I have referred. I thereupon called upon Mr. Leggett, and he immediately handed to me a letter signed by him denying me the privileges of the Patent Office.

When I used the word "conspirators" in my answers, I mean those who have taken part in this sort of business against me, from whose conduct towards me I have had reason to believe, and do believe, that they  
 1977 are my personal enemies for some cause best known to them, and who would do me injury if they could, at any time or place convenient to them. I think I have named them all.

I will here take occasion to say, that, in consequence of explanations made to me by letter by Mr. Leggett since he left the office of Commissioner of Patents, I

had occasion and did fully and unconditionally forgive him for the part he took in those proceedings; and I am not now unfriendly to him, considering that he only  
 1978 made one of those great mistakes so common among men in a lifetime.

I wish here also to say with reference to Mr. Connolly, Mr. Spear, and Mr. Parks, the persons who signed the specifications of judgment of September 18, 1871, that, in consequence of personal interviews with these gentlemen, and of explanations made by them as to the part they took in those proceedings since they left their official place in the Patent Office, I am by no means unfriendly towards Mr. Spear or Parks, or to the  
 1979 memory of Mr. Connolly, he being now deceased. The explanations made by those gentlemen about this matter were at the time entirely satisfactory to me; and, for aught I know, I am now on friendly relations with them, having tried one interference case in the Patent Office with Mr. Spear, as attorney against me, which was in the year 1876 or 1877; and after that he was appointed Commissioner of Patents, and, while in that office, I had occasion at different times to transact business with him in the Patent Office. At those times he treated  
 1980 me kindly and with considerable consideration, all of which was pleasing to me, and to my entire satisfaction. Since Mr. Parks left the Patent Office and became a practising attorney, I have had occasion to do some professional business with him, during which time he treated me so kindly that I never for a moment thought of this paper that years before had been signed by him under date of September 18, 1871.

× Q. 41. In the case of Robertson against Secombe to which you have referred, and in the proceedings in  
 1981 the Patent Office to which the defendants' Exhibit, Norton, refers, was it not found that there was a certain other comparatively fresh-looking paper purporting to bear date August 21, 1855, annexed to a letter in your handwriting of that date, but which comparatively fresh-looking paper bore no mark of ever having been filed in the Patent Office, and which, being written in your handwriting of a different character from that

which you used in 1855, and similar to that which you used some years later, and being written in aniline inks, which, at the date the paper bore, were not invented, was found to be a fraudulent paper and fraudulently annexed by you to the files of the Patent Office?

1982 A. There was a paper something of that description. It was not a fraudulent paper, nor was it ever proven that that paper was fixed up by me, and put into that file by me in the manner indicated in the question. If anybody has ever said that it was such, he is a liar. If anybody now or hereafter says that or any thing approximating it, he is not only a liar, but a scoundrel of the  
1983 deepest dye.

This is my opinion and explanation of that matter. I then believed, have ever since believed, and do now believe, that that paper was placed in that file by Thomas J. W. Robertson or some one of his attorneys, then acting for him in the Patent Office in the matter of an application for the extension of his patent of September 22, 1857. My reason for believing this is this: I gave Mr. Robertson permission in writing, some time in August, 1871, addressed to the Commissioner of Patents, whereby Robertson or his attorneys were allowed to see and to inspect that file and its contents. Before the inspection made by him or them, I personally knew that the original paper filed by me, of the date stated in the question, was then in that file. On the morning of the 23d August, 1871, I ascertained that that original paper had been abstracted from that file by somebody, and the letter spoken of, which I think belonged to another caveat file of mine, had been pasted upon this new or fresh paper spoken of in the question by somebody. This new or fresh  
1984 paper, just referred to, was filed in my application for the obtaining of the patent of January 14, 1862, as I now remember. The outside sheet, bearing the file-marks of that office, of that date, had been torn away from that paper; and this letter, belonging, I think, to another caveat file of mine, pasted on in its place. The whole job was so foolishly and bunglingly done that it showed upon the very face the changes  
1985

- of which I speak. These changes could only have  
 1986 been made by a person in collusion with the examiner  
 in charge of those files ; for I do not believe that any  
 one will for one moment think that any person could,  
 then or now, take a paste-pot and brush under his  
 arm and a roll of papers under the other, and go into  
 the secret archives of the United States Patent Office,  
 take down its files, select papers, and paste one upon  
 another, and not be detected in that business on the  
 spot. I never in my life saw that caveat file except-  
 ing in the presence of Mr. Cranch, the custodian of  
 1987 the secret archives of the Patent Office. The assistant  
 examiner, spoken of by me in my last previous an-  
 swers, was very unfriendly to me, and testified against  
 me before the commission spoken of. He it was who  
 also had charge of the Robertson extension case, and it  
 was he who made the report to the Commissioner of  
 Patents recommending the extension of the Robertson  
 patent. During the progress of these events in the  
 Patent Office at that time, Mr. Robertson and his coun-  
 sel, Mr. Betts, appeared to have very friendly relations  
 1988 with this examiner, observable throughout all these pro-  
 ceedings. After I had given permission in writing to  
 Robertson to see and examine my caveat file of June,  
 1855, I was told by Mr. Cranch that that examination  
 took place in the room of this examiner of which I  
 speak. Now, taking the fact that that caveat paper  
 described the precise invention for which Robertson  
 wanted an extension of seven years for his patent, and  
 which, if not destroyed in some way, would positively  
 prevent the extension which he had asked for, and  
 1989 which antedated Robertson's invention by *more* than  
 two years, coupled with the fact of Robertson's oppor-  
 tunity, for himself and his attorney, Betts, in the exam-  
 ination of my caveat, for which I had previously given  
 permission in writing, as the files will now show, I came  
 to the conclusion without a single doubt, and never  
 since have doubted it, that either Robertson or his attor-  
 ney, or his attorneys, practised that fraud upon the rec-  
 ords of the Patent Office, for I never had known of any-  
 body else having the opportunity or the motive for

1990 doing so; and I do not believe that this Court will believe that I am so consummate a fool, even if I had had the opportunity, to perform on that file the manipulations stated in the last part of the question, because it will not for a moment be supposed that a man without motive could do such a thing as that, for it was the destruction of the highest and best evidence upon which my claim to invention was founded.

It will be observed that all this took place while the Robertson application for extension of his patent was pending in the Patent Office. The discovery of this fraud was first said to have been made by this same man Robertson; and the farce of the trial referred to in the first question on this subject was forced through and terminated by the commissioner, Mr. Leggett, on the 18th September, 1871, just four days before the expiration of the first term of fourteen years of the Robertson patent. As I now remember it, the order for the extension of that patent was made by the commissioner on the twenty-first day of that same month and year; and between that time and the eighteenth day of that month, Leggett, as Commissioner of Patents, and without the authority of law, wrote across the face of the paper referred to in substance that it was spurious and had been surreptitiously filed in the Patent Office. Of course that order removed the obstacle in the way of the extension of this Robertson patent. It being so written upon, Mr. Robertson, and his counsel Mr. Betts, carried triumphantly through the extension of the Robertson patent.

1998 I here take occasion to state that precisely the same invention that was described in that caveat paper, denominated by Leggett as spurious, was clearly and correctly shown by drawings, by specifications and claims, in an application made by Marcus P. Norton and Charles A. Haskins in the month of October, 1857, about two years after the date of the caveat, and about fourteen years before the discovery of this so-called spurious caveat paper, as the records of the Patent Office will show at the present time. Nay, more, the

1994 identical model used in that application is now on file

in this court, if not spirited away, in the case of Robertson against Secombe. Nay, still more, certified copies of the Norton and Haskins application, and of the Marcus P. Norton application of May, 1859, and of his application for the patent of January 14, 1862, are also on file in this court, in the case of Campbell against James and Eddy. These certified papers and the model referred to, if not before spirited away from the files of this court, will be referred to and used by me in the

1995 argument on the hearing of this case on this point, and as was done in the case of Campbell against James and Eddy. Having consulted a certified copy of the caveat of June 21, 1855, embracing only the two papers referred to in the question, I find that the letter which examining counsel speaks of in his question as having been pasted upon some other paper, that that paper properly and rightfully belongs to the file of June 21, 1855. It has the Patent Office file-mark upon it in the following words: "Received and filed August 25, 1855,

1996 S. T. Shugert;" and the letter is dated Tinmouth, Vt., August 21, 1855, the original of which this is a certified copy which I now hold in my hand, belonging to the evidence in the case of Campbell v. James and Eddy, was in my handwriting as I wrote at that time, and was by me sent by mail to the Commissioner of Patents on the day of its date. In this same certified package is also a certified copy of the paper referred to in the question, to which it is alleged that the letter referred to was pasted. The original, of which this is

1997 a true copy, was in the same handwriting as was that of the letter. It was written by me on or about the day of the date of it, which is of the same date precisely as is that of the letter said to have been pasted to it. That original paper, so written by me at the time stated at the home of my father in Vermont, was in all respects and contained the matter and substance that is contained in this certified copy; and that original was by me transmitted by mail to the United States Patent Office: and within a few days thereafter I received a

1998 letter from the Commissioner of Patents, in which he stated in substance that that paper had been received

and filed in my caveat file of 1855, which, I think, was June 21 of that year. I desire particular attention to the fact that these two papers are of the same date; namely, Tinnmouth, Vt., August 21, 1855: and that they belong with each other, and went together in the same mail in the same envelope to the United States Patent Office, addressed to the Commissioner of Patents, and were sent by me.

1999 × Q. 42. Look at the Exhibit Norton, and state whether, or not, the record of the judgment of the Commissioner of Patents therein contained is correct, as given by him.

A. I do not understand what you mean by the question. If you mean to ask me whether that judgment was founded upon evidence, or upon the truth, or upon justice toward me, I answer you that it is not a true judgment, but a fraudulent one, and, as I believe, conceived in fraud and born in iniquity: but if you  
 2000 mean to ask me whether that is a copy of any original paper, I must answer that I do not know, for I have never seen any original of which this might be a copy; but I do know that each and every charge contained in this paper against me are absolutely and unconditionally false and untrue. When I say there was no evidence, I do not include the three or four *ex parte* affidavits that were lain upon the table before that so-called commission, and never seen by me until that time, the contents of which were until then unknown, and the  
 2001 makers of which were never cross-examined. No one having common sense will call such stuff as that *evidence*. It now occurs to me that I have failed to get together the entire number of this bevy of conspirators, for there was a man by the name of Hutchins, who was one of the chiefs among them, an employee of the Patent Office, who not long after went to his final accountability. There was one other person who took an active part in that farce of the prosecution and *persecution*, — I think his name was Browne, but I am not  
 2002 positive.

× Q. 43. Has any other indictment ever been brought against you beside the one in the District of Columbia referred to?



A. If there has been, I have never had any knowledge of it; but I do know that I never have committed an act in my whole life that would justify an indictment against me. What my enemies may have done, under the lead or counsel of Mr. C. Wyllys Betts or of Mr. Frederick H. Betts, I do not know at this present.

2003 Should there be, however, an indictment of which I have no knowledge other than the one above referred to, I am now ready to be tried upon it, no matter what it is.

× Q. 44. Have you ever been expelled from any office which you held in this State?

A. Never: but, on the contrary, I was chosen a delegate to the national convention held at Baltimore, in 1866, from the county of Rensselaer by a county convention of that county, held at the city of Troy,  
2004 and in the year 1873. I think the Legislature of my native State, Vermont, by law or by an Act elected me or appointed me to the office of a Railroad Director in that State which was incorporated by the same Act. This was within one or two years after this fraud and farce in the Patent Office to which counsel has referred in his several questions, and which, it seems to me, if believed by anybody, must have been fresh in the minds of the members of that Legislature.

× Q. 45. You say, in answer to 41, × Q., "I then  
2005 believed, and ever since believed, and do now believe, that that paper was placed in that file by Thomas J. W. Robertson, or some one of his attorneys then acting for him in the Patent Office in the matter of application for the extension of his patent of September 22, 1857." Who were the attorneys to whom you refer?

A. The records of the Patent Office will show that fact, I suppose; but I mean those persons who acted for him in the taking of testimony in that matter of  
2006 extension, and who presented or argued his case before the Commissioner of Patents, whoever they may be,—I mean those.

*Re-direct.*

2007 R. D. Q. 46. State when you first learned, if at all, that there was any trouble of any kind in the Patent Office with reference to the caveat that you have to-day referred to on your cross-examination, or that anybody claimed, or pretended to claim, that there was any thing wrong with reference to that caveat, or any other caveat of yours then on file in the Patent Office. You may include your caveat of October, 1853, in connection with that of June 21, 1855.

2008 A. It was on the 23d August, 1871, in the official room of M. D. Leggett, then Commissioner of Patents; never before that time had I known or heard of there being even a suspicion of any thing wrong with that caveat, or with any other caveat of mine. As to my caveat of June 21, 1855, I have to say that previous to the 23d August, 1871, I had obtained certified copies from the Patent Office of that caveat, in the usual manner practised by the Patent Office, with reference to copies of its records. Each of those certified copies so obtained by me contain the additional paper dated Tinmouth, Vt., August 21, 1855, and represented by complainant's Exhibit "M. D. Leggett," Fraud No. 2, August 31, 1878, I. B.; Ex'r, 2009 which I now hold in my hand, and which is an exhibit filed in the case of *Campbell v. James and Eddy*. I will not mention the caveat of October, 1853, as that has not been referred to on the cross-examination.

On the 22d August, 1871, less than twenty-four hours *before* the outrage and fraud commenced against me in the Patent Office, under the conspiracy of which I have spoken, I received from the Patent Office a certified copy of my caveat file wrapper and its contents, dated June 21, 1855, under the seal of the Patent 2010 Office, and the signature of M. D. Leggett, on that day United States Commissioner of Patents. Those certified papers contained the *additional* description represented by Exhibit D of the exhibit which I have described in this answer. That certified copy caveat, including the *additional* paper, was delivered to me in

person in the United States Patent Office at about 3 o'clock afternoon of the 22d August, 1871, about eighteen hours before the discovery by Robertson, as I was informed, that there was any thing wrong with that

2011 caveat, so that any change of papers from that file or from any other file into that file, must have taken place between 3 o'clock on the afternoon of the 22d August, 1871, and 9 or 10 o'clock on the morning of the twenty-third day of same month and year, that being the time when Mr. Leggett called my attention to that caveat, and the first information or knowledge I ever had concerning the fraud that had been practised by somebody in the changing of some of the papers of that file, evidently for the purpose of destroying it as

2012 a piece of evidence.

The certified copy to which I now refer as having been delivered to me by the Commissioner of Patents on the afternoon of the 22d August, 1871, was filed as evidence on the part of the complainant in this court, in the suit of *Campbell v. James and Eddy*, and to which I refer, and shall read in evidence as a part of my evidence at the argument and final hearing of this cause. It can be seen in that cause by defendants' counsel, if he desires to see it, I have no doubt.

2013 Q. 47. State whether, on the 23d August, 1871, there was pending in the Patent Office an application for the extension of the patent granted to T. J. W. Robertson, of the date of September 22, 1857.

A. There was such an application pending at that time in the Patent Office.

Q. 48. State whether the patent for which Robertson applied to the Commissioner of Patents to be extended for a new term of seven years, contained the same, or substantially and materially the same, invention, as that

2014 described in the additional paper dated Tinmouth, Vt., August 21, 1855, and filed by you as you have stated in your caveat of June 21, 1855.

Objected to as the paper referred to has been held to be a fraudulent and fictitious paper, and there is no evidence worthy of belief that that fictitious paper was a copy of any previous paper.

A. That patent which Robertson was striving to have extended for a new term of seven years, and the caveat paper referred to in the question, contained the same, or substantially and materially the same, invention; and as to the objection taken by counsel to the last question, the statement is of itself untrue in that there never was any evidence taken by me or on my behalf before the Commissioner of Patents at the farce of a trial upon the charges contained in the printed paper which defendants' counsel has marked "Defendants' Exhibit, Norton," and in the suit of Robertson v. Secombe Manufacturing Company. Judge Blatchford, in saying what he did say about that caveat paper, did not say or pretend to say that there was a particle of evidence before him touching that matter, other than that which was produced by Robertson's counsel, substantially the same as contained in this printed paper to which I have alluded in this answer. If I understand his opinion correctly, he only stated about it what had been done by the Commissioner of Patents, without a particle of evidence before him as to the evidence acted upon by Mr. Leggett in the Patent Office. Of course he had no means of knowing whether what Leggett said about it was right or wrong, just or unjust, with reference to it.

Q. 49. State whether you in your own name opposed the application for the extension of the patent to T. J. W. Robertson of September 22, 1857.

A. I did, and assigned my reasons and grounds therefor in writing. My opposition consisted in several objections stated in writing, and among which was this very caveat of June 21, 1855; and my grounds of objections so stated in writing were duly filed in the Patent Office, which was in the month of June or July, 1871.

Q. 50. Pending that application by Robertson for the extension of his patent of September 22, 1857, did you give him permission to see and examine your caveat file of June 21, 1855?

A. I gave him such permission in reply to his request to be allowed to see and examine that file, at the

same time of giving this permission. I also gave him permission to obtain a certified copy of the entire  
 2019 caveat. A certified copy of such permission is now on file as evidence in the case of Campbell v. James and Eddy, which will be referred to if necessary at the final hearing of this cause.

Q. 51. State whether the T. J. W. Robertson patent of September 22, 1857, was extended by M. D. Leggett, Commissioner of Patents, and state the time as near as you remember, if you know.

A. It was so extended, and the order for that extension bears date about the 20th September, 1871.

2020 Q. 52. State the day, if you know the day, when you were cited to appear before the Patent Office to answer to the charges there made and filed against you by M. D. Leggett, Commissioner of Patents.

A. My recollections are that it was the eighth day of September, 1871, at ten o'clock in the forenoon of that day.

Q. 53 State the day when M. D. Leggett, as Commissioner of Patents, made and filed the paper represented by "Defendant's Exhibit, Norton."

2021 A. September 8, 1871.

Q. 54. State the number of days intervening the day set by this commissioner, for the trial by him of the charges made and preferred by him against you, and the decision which was also made by him upon those charges which you have denominated as grossly wrong and fraudulent, and without justifiable foundation in point of fact.

A. The extraordinary number of nine days. In this I do not include either the eighth or the eighth  
 2022 tenth days of that month.

Q. 55. State whether you ever expressed any fear to anybody that this M. D. Leggett, as Commissioner of Patents, would not do you exact justice as to the several charges he had preferred against you, bearing date August 29, 1871, and previous to the so-called trial of these charges, which are found in "Defendant's Exhibit, Norton," December 15, 1879, J. A. S., Ex'r. State fully about this.

A. I never did. I had no such fear; but, on the  
 2023 contrary, I wrote him a letter demanding an investigation indicated in his letter to me of August 23, 1871, and in that letter to him I expressed my entire confidence in him. I did not then have a personal acquaintance with him, and have had none since, excepting what I obtained during the pretended trial of the charges referred to. I never had any misunderstanding with him. I knew nothing then against him, but believe that, if he were a fit and proper man to be Commissioner of Patents, he would be honest and hon-  
 2024 orable enough, at least, to deal fairly by me in those alleged charges. But at and during the progress of the so-called trial upon those charges, I discovered that I had made a great mistake in that respect. I now believe that the course pursued toward myself and my caveat of June 21, 1855, during that so-called trial, was for the purpose of destroying that caveat and the testimony which I had given in the case of Robertson's extension of his patent, so that the Robertson patent of September 22, 1857, might be extended for a new term  
 2025 of seven years. Of this I have no sort of doubt. I further believe that those proceedings were instituted for the purpose by this man Robertson, and his attorneys and counsel, for the destruction of my said caveat as a piece of evidence, as well as to destroy my own personal testimony in any suit in the courts that might be instituted by Robertson or his counsel on that patent after its new or extended term had been granted by the Commissioner of Patents. The only mistake I made with reference to the matter contained in defendants'  
 2026 Exhibit, Norton, December 15, 1879, J. A. S., Ex'r, was, in going to the Patent Office to attend the so-called trial, or in having any thing to do with it before M. D. Leggett. I knew I had done no wrong, or in any unlawful way meddled with or changed or altered or added to any record in the Patent Office, or in any way attempted to put on record any paper that I had not a perfect right to do. Being conscious of no wrong committed by me in the Patent Office, and feeling deeply aggrieved and injured by Leggett's order,

2027 dated the 23d August, 1871, which by him had been furnished to the newspaper press for publication, as I had previously been informed, which order had been published in a great many newspapers throughout the country, I demanded an investigation, not then knowing that it would be *ex parte*, or that I would be deprived of making a full defence. I attended at the day appointed for the trial, fully expecting to be allowed the opportunity to make my full and satisfactory defence, substantially the same as would have been the

2028 case had I been on trial before a court and jury upon the same charges. After that farce of a trial had proceeded a little way, I discovered that I had made *the* great mistake of my life in the asking for, and in attending, the investigation which I myself had demanded in writing; but it was then too late for me to retreat from the false position into which I had been unconsciously drawn.

Now and here, in this connection, I again solemnly deny each and every allegation or charge stated

2029 against me in the printed paper marked "Defendants' Exhibit, Norton," about which defendants' counsel has, without cause or reason, undertaken to examine me in the manner in which he has on this occasion.

I was not at that time a practising attorney before the Patent Office, and had not been for about two years previous thereto. I was never debarred from practising in the Patent Office in a lawful manner. While Leggett was Commissioner of Patents, he pretended to refuse to recognize me as a patent agent.

2030 This is by no means a debarment from practice. For some years previous to that time I had not practised as a patent agent in the Patent Office, because of the pressure and extent of my law business in the several courts of the country; and, as before stated, I was not at the time of the date of this printed paper, and had not been since July 8, 1870, a practising attorney in the Patent Office, for reasons which I have stated, except in my own personal matters. Since the time when Mr. Leggett resigned the office of Commissioner

2031 of Patents, and down to this present time, I have not

been refused or denied any thing that I have asked for in the Patent Office. I do not ask for or expect any better or more kind treatment at the Patent Office than that which I received under Mr. Commissioner Duell's administration, and also under that of Mr. Ellis Spear while he was Commissioner of Patents, who was one of the so-called commission of September 18, 1871, appointed by Mr. Leggett.

2032 Q. 56. Defendants' counsel has asked you a question or so about an indictment. If you have any thing further to say about that matter, you may do so now.

A. I have a good deal that I might say with reference to it, but I do not think it necessary in this connection to take the time for that purpose. I wish, however, to say that the paper referred to in the indictment mentioned by defendants' counsel, which paper is dated about July 20, 1860, I think, and as being the one which I offered for record at the Patent Office on the 22d August, 1871, never has, never can, and  
2033 never could be so construed, that it would in any way or manner change, alter, or transfer the Ransford or Low title to the patent of August 9, 1859, as will appear upon the face of the paper itself.

I have always deeply regretted the fact of the finding and filing of that indictment against me; and yet, for more than seven years past, I have stood up under it without fear or favor, believing, as I always have and now do believe, that it was the result of a conspiracy on the part of the persons I have named during this  
2034 examination, and for the express purpose to enable them to use it against me, to force from me my property, my personal rights, and my reputation. Up to this hour I have never yielded to any threatenings by anybody with reference to this indictment, and never will. As I have before stated, I am now ready, and will be at any future time, to be tried under that indictment, feeling and believing, as I always have and now do, that it was obtained by fraud and deception in the manner I have stated, and for the purpose of  
2035 being used against me in reference to my patented property. If I remember correctly, that indictment



was obtained in January or February of the year 1872, by connivance with the assistant district-attorney, by the name of Harrington, then residing at Washington, but now a refugee from justice, as I have been informed, and verily believe.

I am not now, and never have been, guilty of any charge contained in that indictment in any way, manner, or shape, for reasons already stated by me in this  
2036 examination.

The paper described in that indictment was not a forged one: it was a mere copy of an original that once was.

That indictment was for offering that paper for record at the Patent Office, and not because of having signed it in or by anybody's name.

*Why* there has been no trial upon that indictment to the present time I do not know.

My bondsman, Mr. Pugh, and myself, after I had  
2037 learned of the indictment and given bail under it, went to see the foreman of the grand jury who had indicted me. The facts about the case were stated to him on that occasion; and, in reply thereto, he said that but very little evidence had been presented to the grand jury on the subject, and that that jury had hesitated somewhat about allowing the indictment, and he did not think it would have been found at all but for the course pursued by the assistant district-attorney, Mr. Harrington. We were also informed on that occasion,  
2038 by this foreman, that an indictment had been asked for against me about my caveat of October, 1853, and also my caveat of June, 1855, and that that grand jury absolutely and unanimously refused to entertain any such proposition, as there was no evidence to warrant any such undertaking.

I do not see, nor can I understand precisely, what is desired by defendants' counsel in introducing this indictment in the manner he has done. It is difficult for me to see what weight any court will undertake to  
2039 give to a paper procured as that was, and which has been pigeon-holed for now almost eight years, and upon which trial has been refused to the person so indicted:

nor can I see any force or bearing to be obtained by the introduction of this foul slander, fraud, and infamous libel described by defendants' counsel, as defendants' Exhibit, Norton, December 15, 1879, J. A. S., Ex'r., unless it be for the purposes of a personal insult to me, and to throw mud or filth from a muddy and filthy source upon me, to dishonor me in the  
 2040 presence of this court. Still I have not objected to his asking concerning me just such questions as he might desire to ask, nor will I refuse or hesitate to stand up in open court and be examined and cross-examined by the Court upon any or all acts of my entire past life, if the Court shall so desire for any purpose whatever.

Q. 57. State whether you have any feeling whatever toward the defendants' counsel, or any one of them, because of this attack made upon you under the  
 2041 pretence of a cross-examination of you.

A. I have no feeling of unkindness because of that. Of course I feel a sense of sorrow that such a course should have been undertaken, with neither law nor evidence to sustain or justify it. In this, as in other matters where I have encountered personal wrong and insult at the hands of others without any cause in justification, I have adopted the rule, which I now adhere to, to treat such persons kindly, and that, too, without fear or favor. I am inclined to the opinion that when  
 2042 examining counsel and other counsel associated with him in this cause shall have come to more mature years, and so much further advanced in their profession as to be better able to know and to understand the true and honorable way in which to try a cause in court, and shall have become greater masters in the law and over the subject-matters of evidence, and when they shall have arrived at that point where they can know and be made to feel that there are those who have hearts and homes and firesides, at least as true, as honest, and as upright  
 2043 in every thing, as their own can possibly be, he or they will, no doubt, look back through the space of intervening time with regrets, and, as I trustingly believe, with a repentant wish that the undertakings shadowed

forth in the questions of this cross-examination of a personal character, with no foundation whereon to stand in the line of truth and justice, had never been presented upon this record or carried into operation as they have been by him or them.

2044 Q. 58. State whether, at the time you offered that copy paper for record in the United States Patent Office, it was then customary in that department to record affidavits or other papers relating to the title or the right to use a patented invention.

A. I have no doubt but that it was, from the fact that previous to that time such kind of papers had been recorded in that office which related to inventions and patents of my own. I have knowledge of my own that such kind of papers had also, previous to that time, been so entered of record in the Patent Office,  
2045 and those were papers not relating to any invention or patent of mine, but had reference to those belonging to clients of mine. I recollect of having seen such records in the Patent Office in other cases in which I had no interest as patentee or attorney. That right, or privilege, which existed then, since the trouble which I had in the Patent Office with Commissioner Leggett and others, has been changed, so that it does not now prevail.

2046 Q. 59. Referring to defendants' Exhibit, Norton, December 15, 1879, J. A. S., Ex'r., it is stated there substantially that you were consulted with reference to the appointment of that so-called commission. State what you may know about that, if any thing.

A. I not only was not consulted about that by anybody, but neither myself nor my counsel, Gen. T. T. Crittenden, and my other counsel, Mr. J. C. Coombs, formerly a member of the Board of Appeals in the Patent Office, knew any thing as to who were to form that commission, until we appeared in the presence of  
2047 the commission on the morning of the 8th of September, 1871, at ten o'clock A.M. of that day. Nor did I ever assent or consent to the appointment of that or any commission to hear and try those which I knew to be false and malicious charges set out in defendants'

Exhibit, Norton ; but, on the contrary, I knew then, as I know now, that there was no law in this country authorizing the forming or constructing of any such commission, and that the order by which they were appointed was unlawful in every particular, and their  
 2048 doings and acts as a commission were not only unlawful in all respects, but in plain and positive violation of the Constitution of the United States of America, by which I am a citizen of the United States, and which clearly and positively sets out and defines my rights and privileges as an American citizen, subject only to that Constitution and the laws of my country under which I live and abide as a citizen of the United States. When I speak of false and malicious charges in this examination, I mean each and every  
 2049 of those that are stated in defendants' Exhibit, Norton, either by number, or in any other form in that exhibit, which appears to be signed M. D. Leggett, Commissioner of Patents, dated September 18, 1871, and embracing another paper dated August 29, 1871, and also another, dated September 18, 1871, all which form four printed pages of that exhibit.

Q. 60. Have you any thing more which you desire to say on this occasion, with reference to this personal matter introduced on your cross-examination by defendants' counsel? and, if you have, you now have the  
 2050 opportunity for doing so.

A. I have many facts that I would wish to present in detail about this matter; but I believe I have already said enough at present on this examination, and will leave those other things unsaid at this time and to be said by me on another and more appropriate occasion than this for their utterance, having as hastily and briefly as I could consistently met, now and here, these malicious, unfounded, and disreputable falsehoods,  
 2051 slanders, and libels.

*Re-cross Examination by C. W. BETTS, Esq.*

× Q. 61. The questions which you have answered on the re-direct were all propounded by yourself, were they not?

A. Being counsel in this cause, and having been wantonly assailed by you in your questions in my cross-examination, and having a perfect knowledge of the matters to which you have alluded in your questions directly personal to me, I came to the conclusion that I was competent, and that it was proper for me to propose in this record all the questions you referred to; and I still believe that I have violated no law in doing so, and I do not think that I ought to be indicted by a grand jury for having done so, or that a commission in violation of law should be appointed to try me on the *ex parte* affidavit of yourself or anybody else, because, in my judgment, I thought it proper to put those questions. Yet I may be indicted by a grand jury for it, a commission may be appointed to try me on your *ex parte* affidavit for it, and I may be hounded from one end of the country to the other by your office for having done it; and it may be impossible, through the years to come, for the hand of Time to write upon it "forgotten and forgiven" for so great an offence.

× Q. 62. Did you ever prosecute for slander or libel any of the band whom you allege conspired together to injure and defame that which you denominate your character?

2054 A. I never did, for two reasons; namely, 1st, Those conspirators were generally, in my opinion, a base and worthless set, and were known to be so in the several communities where they then resided, and generally without any property to have satisfied any judgment that I might have obtained against them. This is one reason why I thought it best to not soil my hands by having any thing to do with them; and,

2d, Because I am one of that kind of persons who submit to wrongs and injustices, rather than to continue a strife such as might have followed in the case of a suit of the kind indicated in the question, as I rely wholly and entirely upon the character and the reputation made and established by me in the community where I reside, as a full and complete reputation and vindication of my life and character, rather than to ask the protection of any Court with reference thereto.

Far greater and better men in all respects than either myself or yourself, or anybody associated with you in family or business relations, have been publicly assailed, wantonly and maliciously slandered and vilified, and yet I never heard or knew of their going to the Court and asking for damages because of a slandered reputation. I have always believed, and still believe, that the going to law upon questions of that kind is, of the two, evidence of weakness, rather than that of strength. Should I continue to adhere to these views, it will save you from a suit for having here upon this record wantonly uttered and published this which I believe myself you know to be a foul slander and a libel of no ordinary character. I shall strive very hard indeed to adhere to these expressed convictions of mine on this subject, solely and only upon the grounds that I have stated in this answer; for I can well afford, standing as I do in my profession, in my home, private, and public life, to bear with patience, as others before me have borne, slander and libel, trusting to the entire record of my past life and to this Court in this cause to wholly vindicate and uphold me as against these wicked aspersions of character.

2058    × Q. 63. You say that the assignment referred to in the sixth charge set forth in defendants' Exhibit, Norton, and which the commission appointed to try you found you guilty of forging, together with the names of the assigners and witnesses, was only a copy of an original document. Where is that original document? To this and my remaining questions I request a direct answer, without further encumbering the record with your prolonged protestations of innocence and trumpet-heralded virtues.

2059    A. In the first place, the premises upon which your question is founded is entirely void of truth. There never was an assignment of the kind stated by you, nor any paper looking in that direction. Personally I have no information or knowledge as to the whereabouts of the paper stated in what you denominate the sixth charge of defendants' Exhibit, Norton. It is my opinion, however, that if you know and will ask that

person or persons who, to get rid of my caveat of June 21, 1855, as a piece of evidence in the Robertson extension case, undertook and did perpetrate a fraud upon that file by abstracting from it the original paper made and filed by me in that caveat dated the 21st August, 1855, and substituted in place of it an exact copy of it in my handwriting of later years; also abstracted from another file, in which it had been used as evidence, and upon which afterwards was pasted by somebody that original letter written by me on the day of its date; namely, August 21, 1855, and which was filed in the Patent Office by Mr. S. T. Shugert, chief clerk of the Patent Office, on the 25th August, 1855, I have no doubt but that you will be able to know just where it is at this time. I know of no other way in which you can obtain the information sought by your question. As to the last part of your question, I have no word to say on this occasion: the record itself will show for itself to the Court.

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2062  
× Q. 64. I refer to the agreement mentioned by you in answer to × Q. 40, and of which you say you made a clear, fresh copy, and regarding which you say that your only crime was in not writing across the face the statement that it was a copy. Where did you get the paper from which you made that copy?

A. I have neither seen, nor known of the existence of, that paper since the 22d August, 1871, when I filed it in United States Patent Office for record. That paper was made from a copy of the original paper which I filed in the Patent Office in my application for a patent, dated January 14, 1862; and that copy was used in the Patent Office at the time of this so-called trial, and was left there with other papers in that case, and which was not returned to me at the time I sent to the Patent Office to withdraw the papers filed at that time on that subject. I know nothing at this time of the whereabouts of those two papers, and have not since the 18th September, 1871. While Mr. Leggett continued after that date to be Commissioner of Patents, I never went inside of the Patent Office because of his hostility to me.

× Q. 65. Where did you get the paper from which you made a clear, fresh copy, upon clean white paper, and which you sent or took to the Patent Office, with an affidavit that it was a copy of the original filed in the application of January 14, 1862?

A. That was a copy from the original that had been filed in the application of the patent of January 14, 1862. All papers relating to the subject-matter embraced in that patent were then on file in the office of the Secombe Manufacturing Company in this city, for I had licensed that company to manufacture and sell under that and certain other patents of mine.

2065 When the assistant examiner raised the question to which I have alluded, and for that reason would not further consider my application for a re-issue of the patent of January 14, 1862, I sent to Mr. William W. Secombe, president of that company, to send that paper to me at Washington; and he complied with my request. That application for a re-issue, if I remember correctly, was made by the Secomb Manufacturing Company as assignees of that patent, or else the application was so prepared that the re-issue would go out in that name. This Secomb Manufacturing Company is the same company that was sued by Thomas J. W. Robertson in this court, on his patent of September 22, 1857, and which was afterwards extended by the Commissioner of Patents, the suit being in the extended term of that patent.

× Q. 66. Was the fresh-looking paper pasted upon the letter of August 21, 1855, and charged in the fourth item in defendants' Exhibit, Norton, to have been surreptitiously placed upon the files, similar to the paper which you allege was sent with the letter of August 21, 1855?

A. The charge to which you refer in your question in point of fact is false, and it is a lie in every particular wherein it charges me with any wrong doing. I have already stated that the letter dated the twenty-first day of August, 1855, written by me and sent to the Patent Office through the mails, and filed in that office on the 25th August, 1855, was in the same handwriting of



- the same date, and written by me at the same time I  
 2068 wrote the letter; and I now here again repeat that to be  
 a fact: and it is this original additional description of  
 my invention so dated and filed that was abstracted by  
 somebody from my caveat file of June 21, 1855, and  
 another paper substituted in its place of the kind that  
 I have described. This letter that somebody fraudu-  
 lently pasted to the last paper I have named, was in my  
 handwriting, such as I wrote in June, 1855. The other  
 paper was in my handwriting of some years later, and  
 a good deal such writing as my present handwriting.  
 2069 The two papers showed a marked difference in respect  
 of their handwritings, so much so as to be clearly and  
 distinctly observable by anybody. Indeed, but for my  
 name being appended to each paper, I not believe that  
 anybody would have suspected that I wrote the two  
 papers, which I did do at different times with inter-  
 vening years. The abstraction of that original paper  
 from that caveat file, and the fraud that was committed  
 upon that file by somebody, was never known, to my  
 knowledge, until within a few days after I gave the  
 2070 written permission to Thomas J. W. Robertson to ex-  
 amine that file, and to obtain certified copies from any  
 and all papers contained in it. I now refer to the  
 caveat file of June 21, 1855.

× Q. 67. You do not state whether the paper  
 pasted upon the letter of August 21, 1855, and held by  
 the commission to have been surreptitiously placed  
 upon the files, was identical with the paper which you  
 allege you sent to the Patent Office with that letter,  
 dated August 21, 1855. Was it, or was it not, identi-  
 2071 cal?

A. If you mean in your question to ask me as to  
 the handwriting of the two papers, I have already two  
 or three times stated, and again state, that the two  
 papers were written by me at the same time, and were  
 in the same handwriting, and in that respect were as  
 near identical as they could be made. I understand  
 this to be your question.

× Q. 68. I wish to know whether the paper men-  
 tioned in the fourth charge of defendants' Exhibit,

2072 Norton, contains the same words. and was verbally identical with the paper which you allege was sent by you with the letter of August 21, 1855.

A. I have no doubt but that they were so. Whether there was a word left out in either of them, or whether they were punctuated differently in some respects, or whether some of the letter "t's" were crossed and others not, some of the letter "i's" dotted, while others were not, I would not at this late day undertake to state; but that they were substantially  
2073 and materially the same in every respect, I have no doubt.

As to the kind of paper on which the two papers of August 21, 1855, were written by me, I have this to say: The original additional description of the date of August 21, 1855, was written upon what is technically known as fool's-cap paper, as I now remember it, and the letter accompanying that paper to the Patent Office of the same date, was written on one sheet of paper, either of the kind that is known as commercial  
2074 note-paper, or the ordinary letter-paper. The first paper was enveloped in the latter or accompanying letter, and thus folded were enclosed in a wrapper, and in that form transmitted to the Patent Office through the mail.

× Q. 69. Did you produce at your trial at Washington, or did you have to produce, a contemporaneous copy of that paper which you say was sent with the letter of August 21, 1855?

A. My recollections are that no papers concerning  
2075 that file were used excepting the file itself, as produced by the Commissioner of Patents; and yet I may have used a certified copy of that caveat certified to, years before that time.

× Q. 70. Did you have a contemporaneous copy of that alleged caveat of 1855?

A. I confess myself unable to understand what you mean by "contemporaneous" copy in this connection; but I will say that I had a certified copy of that caveat and all its papers, including this one certified to about  
2076 the year 1860 or 1861, from which I had copies made

whenever I had occasion to for any purpose: and in the summer of the year 1871, just previous to my entering my objections and opposition to the extension of this Robertson patent of September 22, 1857, I obtained another certified copy of this same caveat, containing this additional description paper of August 21, 1855, and filed it as evidence against the extension of Robertson's. So, too, a certified copy of these same papers and file were obtained and filed in evidence in  
 2077 the case of *Robertson v. Secombe*, in the suit to which I have referred.

× Q. 71. Have you now got that certified copy of 1860 or 1861? and will you produce it at the trial of this case?

A. No: I have not that copy. If I had I would produce it. It was delivered to the Secombe Manufacturing Company at the time I made arrangement with that Company to manufacture under my patent of January 14, 1862, and other patents, which was, I  
 2078 think, in the early part of the year 1870. The other certified copy of that caveat which I had in my possession, is now on file as evidence in the case of *Campbell v. James* and others; and, as I now remember, it was certified to by M. D. Leggett, Commissioner of Patents, on the 22d August, 1871.

During the progress of that suit it became necessary that I should obtain another certified copy of each of the two papers I have last above referred to; and on the 13th August, 1878, I received those copies, certified to by Ellis Spear, Commissioner of Patents, under  
 2079 the following certificate: to wit, "This is to certify that the annexed is a true copy from the files of this office of additional papers found in the caveat file of Marcus P. Norton, filed October 20, 1853, for machine for mailing and folding letters," and to this certificate are attached the two papers dated August 21, 1855, one of which is headed, "Additional paper to railroad printing-press." I now hold that certificate and those papers in my hand while answering that question.  
 2080 Now, who abstracted that paper from the caveat of January 21, 1855, and committed a fraud by putting it

into my caveat file of October 20, 1853, is beyond my power to know or to determine, but the certificate which I have read shows the fact to be as I have stated.

× Q. 72. Will you obtain and produce that certified copy of 1860 or 1861?

A. It is not in my power to do so. I have no objections to your doing so, if you wish it, providing you will do it at your own expense. If I could get it I  
 2081 should most gladly do so, or, if I knew where it is at this time I would do all I could to get it. I will say here, that I have had a certified copy of that caveat and all those papers containing the very papers that I have stated about to-day, which was certified to in November, 1857, which was obtained for the purposes of obtaining an interference with the Robertson patent of September 22, 1857, by putting the application for a patent made by myself and Charles A. Haskins of New York, into that interference; and where that certified copy is I do not know. The last I saw of it was  
 2082 with Mr. Haskins, who was joined with me in that application in October, 1857; and the reason why that application was not prosecuted to our interference case with the Robertson patent, was because Peter Low, one of the assignees of that application, who had agreed to furnish the money for that purpose, refused to do so, and subsequently cheated and plundered Haskins and myself of the fruits of our joint invention for which we had applied for a patent by purchasing  
 2083 and taking an assignment of this Robertson patent, upon which our joint application had been rejected by the Commissioner of Patents. My recollections now are that he paid Robertson either one hundred dollars or two hundred dollars for that patent, extending to a period of fourteen years from its date.

By doing so, he saved the expenses of the interference case and obtained possession of the whole invention and patent through Robertson, thereby leaving Haskins and myself powerless to prosecute our joint application of October, 1857, within about one month after  
 2084 the granting of the Robertson patent.

I will here take occasion to further say, that if the

Norton & Haskin's application for a patent of October, 1857, had not continued, the identical invention on which the Robertson patent had been granted September 22, 1857, the Commissioner of Patents would not have been so foolish as to have rejected our joint application upon that patent of Robertson.

2085 If any one of ordinary intelligence will compare the application for a patent by Norton & Haskins, of October, 1857, with my caveat of June 21, 1855, and more especially with that paper dated August 23, 1855, and sent by me to the Patent Office as I have stated, they will find the same identical invention in all respects contained in both the papers last above referred to, and in that joint application of Norton & Haskins, excepting only the self-inking roller device found in the application of Norton & Haskins.

2086 Had this circumstance and fact been presented to Judge Blatchford on the argument of the Robertson & Secombe suit, he could have traced the truth concerning this matter, and been able to have discovered the fraud practised upon me, and the wrong done to me in the fraudulent interference with my caveat of June 21, 1855, at the time when Robertson and his attorneys and counsellors were in the Patent Office of the United States engaged in procuring an extension of the Robertson patent, which extension was granted by the Commissioner of Patents within two or three days  
2087 after; and without the authority of law, he wrote upon the back of each of those two papers dated August 21, 1855, what was there written and signed by him as Commissioner of Patents, each of which may be seen by referring to those certified papers which I now hold in my hand, and which belong to the files of this court, in the case of Campbell v. James & Eddy, as does also a certified copy of this joint application of Norton & Haskins, which is now on file in the same cause, including a copy of the drawings of the model  
2088 that was filed in that application.

All that part of the answer referring to the paper dated August, 1855, objected to by defendants' counsel, as that paper has been held a fraud by the Patent

Office, and no evidence has ever been produced that there ever was any original paper in the file of the caveat of 1855 similar to the one declared to be fraudulent.

2089 X Q. 73. Can you not add that if, at the time of Robertson's application of 1857, the alleged paper of August 21, 1855, had been in your caveat papers of 1855, the Commissioner of Patents would not have been so foolish as to grant the Robertson patent?

2090 A. I can add no such thing for this reason: and, if you know any thing concerning the practice in the Patent Office, you would never have asked me this question; for it has long been a well-known fact, that, in the examination of any application for a patent by the Commissioner of Patents, he never consults a caveat in that examination that has been filed more than one year previous to the date of the application being examined. I will cite a case exactly in point, and will produce from the files of the Patent Office a certified copy of a decision to justify what I am about to say.

2091 In 1861, when my application was pending on which the patent of January 14, 1862, was granted, I very distinctly and with great particularity directed the attention of the Commissioner of Patents to this identical caveat of June 21, 1862, and stated to him what that caveat contained, he having rejected my application of that time. In substance I inquired of him why it was that he granted this Robertson patent of September 22, 1857, directly in the face and eyes of this very caveat of June 21, 1855, then on record in the Patent Office, precisely as I have sworn it was in every respect; and, to my inquiries on this subject, he replied in substance, that my caveat of June 21, 1855, having been filed more than one year before the Robertson application was filed, could not, under the rules of the Patent Office, have been consulted in his examination of the Robertson application, to see whether he would grant Robertson's patent. And in that communication the Commissioner of Patents substantially admitted that my caveat of June 21, 1855, was then precisely the same in all respects as I have sworn it

was on this examination ; and this was ten years before the remarkable discovery by Robertson and his counsel, when, asking for an extension of the Robertson patent, and this caveat being the only evidence in the way of its being granted, that it was found that that caveat  
 2093 had been tampered with and changed, and Robertson and his counsel charged me with that villany, by which I was forcibly reminded of an incident that took place during one of the Indian wars, when the great Indian chief Philip, under the cover of the darkness of night, stealthily stole into his own camp among his chiefs, and by his own hand murdered several of them, and charged that fearful crime upon the pale-faces, in order to make his Indians fight them. I know of no better comparison to make with that villany pending  
 2094 the Robertson application for an extension of his patent than this.

× Q. 74. Your answer begs the question by assuming that the paper which you allege originally accompanied the letter of August 21, 1855, was similar to the paper of that date declared to be a fraud by the commissioner. I now give you an opportunity to clear yourself of the charge against you, and show yourself, if you can, to be a witness worthy of belief by this Court, by producing in the trial of this cause your evi-  
 2095 dence that a paper like the one pronounced a fraud accompanied the letter of August 21, 1855. What evidence to that effect will you, then, produce ?

A. My answer to the previous question neither begs the question, nor begs any thing of you. As to the infamous charge that you have maliciously and without cause spread in this record, I shall take no further trouble concerning it ; and as to the most gracious condescension which you make in allowing me the opportunity to show to this Court whether I am  
 2096 worthy of belief, is a matter which does not in the least disturb me. If you desire to assail my character for truth and veracity in a fair and open way, admitted by the law of evidence, unaccompanied by insult and buffoonery, I shall be most happy indeed to meet you ; and, if I cannot show myself to be at least as free from

trickery and entitled to credit, and to be believed whether under oath, as yourself, or not, by this or any Court you may select, then, indeed, I will go down and pronounce my life a failure. I am ready and  
 2097 perfectly willing to meet you nor anybody else on that issue; and leave it to the reputable citizens of the city of Troy, — where I have lived and my home and business has been for the past twenty-three years most of the time, excepting, perhaps, for a year and a half when travelling in this and other countries in consequence of illness, and had a country residence near by, — to determine and decide my character for truth and veracity or any thing else, as well as to decide whether  
 2098 you are a coward or a knave for having made this attack on me at this time and in this place. Until you open a battle of that character I shall remain passively silent.

× Q. 75. In August, 1856, or prior to that time, did you renew your caveat of 1855?

A. I am sorry to be obliged to say that I did not, and it was a great mistake that I did not.

× Q. 76. How did you induce Mr. P. Low, who, you say, had robbed and defrauded you in 1857, to sign the paper dated July 20, 1859, or the original of that  
 2099 paper, described in the sixth charge of defendants' Exhibit, Norton?

A. I answer that I don't know that there was any inducing about it. Had he not done so, both he and Ransford would have been sued for a specific performance of their agreement with me about that invention, or else I would have brought a suit to vacate, and set aside the assignment about that invention that I made to them on the 2d May, 1859, because of non-performance on their part. The paper of which you speak in  
 2100 your question I believe to be misprinted in the paper to which you refer; and it was dated either July, 1860 or 1861, as I now remember it. That matter of dates, however, is not material.

*Re-direct Examination resumed.*

Q. 77. State whether you have to-day received a



letter from any source with reference to the subject-matter on which you have been examined on this examination; and, if so, produce that letter with the  
 2101 envelope and the letter itself, and file them in evidence in this cause in answer to this question.

A. I have received a letter of the kind stated in the question, dated and post-marked December 16, 1879, and addressed to me Metropolitan Hotel, New York. I now produce both letter and envelope as a part of this answer, and ask the examiner to so mark each of them so as to identify them in connection with this question and answer. They are marked "Complainant's Exhibit, L'Amoreaux, No. 2, J. A. S., Ex'r,  
 2102 December 17, 1879."

Q. 78. In view of the attack made on you by defendants' counsel during your cross-examination as a witness in this cause, state whether you desire here to offer in evidence any documentary proof in refutation of that attack; and, if you do, state what they are, and here produce them, that they may be filed and marked as complainant's exhibits in this cause.

A. I have several. The first consists of a certified copy of file, wrapper and contents and drawings, in  
 2103 the matter of the application of Marcus P. Norton and C. A. Haskins, filed October 25, 1857, in the United States Patent Office, for hand-printing stamp, and filed as complainant's exhibit, Norton, No. 22, in this court, in the case of *Campbell v. James and Eddy*, and the next consists of an affidavit made by Cyrus A. Sherwood on the 5th April, 1872, before A. D. Lyon, a notary public at Troy, N.Y., and filed in the case above named, as follows: to wit, "Sherwood's affidavit attached to Norton's caveat." The next is a certified  
 2104 copy from the Patent Office of the caveat of Marcus P. Norton, filed June 21, 1855, for railroad ticket printing-press, certified to by M. D. Leggett, Commissioner of Patents, on the 22d August, 1871, containing within that certificate the following: "Additional paper to railroad printing-press, Tinmouth, Vt., August 21, 1855, Honorable Commissioner of Patents," and also a letter dated as follows: "Tinmouth, Vt.,

August 21, 1855, Commissioner of Patents," and which is signed "Marcus P. Norton," and indorsed as follows: to wit, "Received and filed August 25, 1855, S. T. Shugert," and containing also the following: to wit, "August 5, 1871. I hereby consent that Mr. Robertson have a duly certified copy of my caveat herein named, Marcus P. Norton," and containing also the following: "Please furnish a certified copy of the file and contents of caveat of Marcus P. Norton, for railway printing-press, dated June 21, 1855, T. J. W. Robertson," and on which paper is indorsed the following: to wit, "File and contents, caveat, see August 5, 1871," and also the following: "Great haste," each and every of which were filed as "Complainant's Exhibit, Norton's caveat, dated June 21, 1855," in the suit in this court of *Campbell v. James and Eddy*; and also a certified copy from the Patent Office of the file, wrapper and contents, in the matter of letters-patent granted to Marcus P. Norton, January 14, 1862, No. 34,184, for hand-stamps for post-office, certified to on the 19th October, 1872, by J. M. Thatcher, Acting Commissioner of Patents, and filed in that cause as "Complainant's Exhibit, file, wrapper and contents, of Norton's letters-patent of January 14, 1862," which contains several letters written by myself, and the answers thereto by the Commissioner of Patents, to each of which I especially invite the attention of this Court.

The next is an affidavit made by J. D. Green of Troy, on September 11, 1871, before Charles Cons. Callan, notary public, at the city of Washington, District of Columbia, which is on file in this court in the case above referred to as "Complainant's Exhibit, J. D. Green, Norton's caveat," which affidavit is attached to "Complainant's Exhibit, United States Patent Office," in the case above referred to, and is a part of that exhibit, which also consists of three papers certified to from my caveat of October 20, 1853, for mailing and folding letters, the same being certified to on the 18th January, 1871, by Samuel A. Duncan, Acting Commissioner of Patents, by which is clearly shown to this

- Court that the Commissioner of Patents allowed persons without my knowledge, consent, or allowance, to have access to my caveat files, obtaining therefrom such certified copies as they might direct. How many and to whom other certified copies from my caveat files were furnished by the Commissioner of Patents, or who or how many other persons than this man Green were allowed access to and inspection of my caveat files in the Patent Office previous to the 23d August, 1871, by M. D. Leggett, then Commissioner of Patents, I am unable definitely here to state.
- 2109 The next which I offer in evidence is an affidavit made by Charles Cons. Callan, on September 14, 1871, before H. Clay Johnson, a notary public, in the city of Washington, District of Columbia, which is on file in this court in the case of *Campbell v. James and Eddy*, as "Complainant's Exhibit, Norton, No. 10;" and also an affidavit made by Marcus P. Norton on the 22d August, 1871, before Charles Cons. Callan, a notary public at the city of Washington, District of Columbia, which is on file in the case last above stated, as
- 2110 "Complainant's Exhibit, Norton, No. 12;" and also a letter dated August 23, 1871, National Hotel, Washington, D.C., written by Marcus P. Norton, and addressed to the Commissioner of Patents, which is on file in this court in the case last above named, as "Complainant's Exhibit, Norton, No. 14;" and also an affidavit made by Marcus P. Norton on September 14, 1871, before the said Callan, notary public, which is on file in this court in the case above stated, as "Complainant's Exhibit, Norton, No. 16;" also a paper signed "M. D. Leggett,
- 2111 Commissioner of Patents," dated August 23, 1871, and on file in this court in the case above stated, as "Complainant's Exhibit, Norton, No. 18;" and also a letter signed "M. D. Leggett, Commissioner of Patents," dated October 22, 1872, addressed to W. W. Secombe, No. 7 Park Place, New York, and on file in this court in the case above stated, as "Complainant's Exhibit, Norton, No. 20;" also a paper filed and marked in this court, in the case above stated, as "Complainant's Exhibit, M. D. Leggett, Fraud No. 1;" also another

- 2113 paper on file in this court, in that cause, as "Complainant's Exhibit, M. D. Leggett, Fraud No. 2;" also another paper on file in that cause, in this court, as "Complainant's Exhibit, M. D. Leggett, Fraud No. 3;" also another paper on file in that same cause, in this court, as "Complainant's Exhibit, Sherwood, J. K. L.," consisting of the account of Cyrus A. Sherwood against Marcus P. Norton, for work on post-office printing, and dating and cancelling stamps, commencing January 8, 1857, and ending January 11, 1865; and I ask
- 2114 this examiner to mark in this cause each of these exhibits in the order in which I have stated them, and under the titles that I have stated, simply affixing to each his initials and the date of filing the same in this cause.

I also offer in evidence a certified copy from the Patent Office of the letters-patent granted to T. J. W. Robertson, September 22, 1857, and No. 18,249; and also the certificate of the Commissioner of Patents, extending the same for a new term of seven

- 2115 years from and after the 22d September, 1871.

Also a certified copy from the Patent Office of the opposition and reasons therefor entered as against the extension of that patent by Marcus P. Norton of the city of Troy, N.Y., in June or July, 1871.

Also a certified copy from the Patent Office of a re-issue by Robertson of the above-named patent, after the same had been extended by M. D. Leggett, Commissioner of Patents, on or about the 21st of September, 1871, which I request the examiner to mark as

- 2116 "Complainant's Exhibit, T. J. W. Robertson, Nos. 1, 2, and 3."

Answer and exhibits objected to as incompetent and immaterial, by defendants' counsel.

Q. 79. You have referred to certain exhibits in your last answer, and those have been heretofore marked and filed in this cause as "Complainant's Exhibits," in the manner shown upon each one of them.

- Many of those exhibits appear to be printed, and as
- 2117 though taken from some book. State the facts with reference to that matter.

A. They are taken from the printed record in the case of *Campbell v. James and Eddy*, a suit now pending in this court, and recently decided at final hearing by Judge Hoyt H. Wheeler. I have had those printed exhibits compared with the original record corresponding to each one of them, as appears from the files of this court, in that cause, and I have no doubt of the correctness of each one of them.

2118 The original of each is on file in this court and in that cause, and each of the same are considered as being also filed in this cause; and I desire the same to be so considered, and that each party shall have privilege to refer to each of them for any purpose desired at the final hearing and argument of this cause.

I have pursued this course for convenience, to save expense, and also because some of them are certified to under such dates of the certificate that I could not get others certified to now as of the date those certificates

2119 are.

Those dates being important as to certain points to be brought up at the hearing, that I thought this course the only proper course to pursue with reference to those exhibits; and the same, being on file in this court, could just as readily be seen by the Court at the hearing of this cause; as they could if originally filed herein.

MARCUS P. NORTON.

2120 Sworn to before me this 3d January, 1880,

JOHN A. SHIELDS,  
*Examiner, &c.*

NEW YORK, January 26, 1880.

Met pursuant to adjournment.

Present — Hon. Marcus P. Norton of counsel for  
2121 complainant, and C. W. Betts, Esq., of counsel for defendant.

*Re-direct Examination of HON. MARCUS P. NORTON.*

Q. 80. You have stated in this examination substantially that you consented that T. J. W. Robertson might have a certified copy of your caveat of June 21, 1855. If you have any means of knowing and stating Mr. Robertson's application to you for such copy, and  
 2122 of your consent thereto, you may state the same.

A. I hold in my hands a certified copy of the file, wrapper, and of the contents thereof, "from the files of this office of the caveat of M. P. Norton, filed June 21, 1855, for railroad ticket printing-press."

The testimonial and seal of that certificate reads as follows:

"In testimony whereof, I, M. D. Leggett, Commissioner of Patents, have caused the seal of the Patent Office to be hereto affixed this twenty-second day of  
 2123 August, in the year of our Lord one thousand eight [L.S.] hundred and seventy-one, and of the independence of the United States the ninety-sixth,

M. D. LEGGETT,  
*Commissioner.*

Now, in this certified copy, I find the following written request of T. J. W. Robertson, namely, "Please furnish a certified copy of the file and contents of caveat of Marcus P. Norton for railway ticket printing-press, dated June 21, 1855, T. J. W. Robertson."

This that I have just quoted from that caveat was  
 2124 written in pencil, and presented to me by T. J. W. Robertson at the time he requested of me a certified copy of that caveat. I took that written request of his, and wrote across the face of it the following: "August 5, 1871. I hereby consent that Mr. Robertson have a duly certified copy of my caveat herein named;" and I signed that consent as follows: "Marcus P. Norton." Upon that paper, from which I have taken the above quotations, is written the following: "File and contents caveat (See August 5);" and also is written on the same  
 2125 paper the following words; namely, "Great haste."

This paper was filed in the Patent Office by Mr. Robertson, and upon it he obtained a certified copy of

that caveat at about the time that I gave the consent that I have stated in this answer.

The certificate of the Commissioner of Patents, in which he certifies to the correctness and truthfulness of each and every paper under and within the certificate which I have quoted on this record, it will be observed, 2126 is dated the twenty-second day of August, 1871, and the original signature, and in the handwriting of M. D. Leggett, will be found in that certificate. This is the identical certified copy that I have before referred to as having been handed to me on the afternoon of the twenty-second day of August, 1871, with the following written therein in pencil: namely, "M. P. Norton, present;" and it was handed to me, as before stated, at about the closing of the business hours in the Patent Office on that day.

2127 On the opening of the Patent Office for business on the next day, August 23, 1871, which was about nine o'clock A.M. of that day, I was requested by a messenger of M. D. Leggett to come to his official room. In obedience to that request, I visited him in his official room at about ten o'clock A.M. of that day. Upon meeting Mr. Leggett at that time and place, and without one word of conversation on his part directed to me, he handed to me a paper in writing in the following words and figures: namely, "Department of the 2128 Interior Patent Office, Washington, D.C., August 23, 1871. Until further orders, Marcus P. Norton will not be permitted to examine any papers, look into any files, or transact any business in the Patent Office, except by and through some respectable and accredited attorney. M. D. Leggett, Commissioner of Patents."

Upon receiving which, I retired from the Patent Office only to receive, as subsequent events proved, from the hands of M. D. Leggett, Commissioner of Patents, another letter signed by him in his official capacity, dated at the Patent Office in Washington, 2129 August 29, 1871, and addressed to me personally, containing eight specific charges against me, each and every one of which, in fact and in law, are false, malicious, corrupt, and an infamous, wicked libel, without

one particle of lawful *evidence* to justify this wanton attack upon me by that then public libeller, who, after having retired from the office of Commissioner of Patents, addressed to me a letter excusing himself for his conduct on that occasion, and only justifying his

2130 course by saying that he had been misled by others, whom, he said, he had since learned had long been my personal enemies. That letter was so satisfactory an explanation that I discontinued proceedings in the courts of this State, which I had instituted against him to punish him for that libel, and in which suit I had obtained an order for his arrest should he come within the jurisdiction of the Court; but those papers were not filed or served: since which time I have not felt as though I ought to harbor or maintain unfriendly

2131 feelings towards Mr. Leggett, none of which I have at the present time.

Whatever I have said in characterizing this examination in the terms I have, the course and conduct of Mr. Leggett towards me applies only to the time when those transactions occurred in the Patent Office; and the letter of explanation to which I refer has no influence upon me in pronouncing those proceedings and all matters connected with them as fraudulent, and as a malicious and foul slander and libel upon me.

2132 If Mr. Leggett were innocent in the part he took in those proceedings at the subsequent and remote time when they occurred as he claims himself to be, certainly believing, as I did, the statement he had made, I ought not at this time to harbor towards him unkind feeling; for I knew or believed that he had been deceived and misled by the conspirators I have named on this examination, who were bound at all hazards, as the record shows, to obtain an extension of the Robertson Patent of September 22, 1857, and No. 18,249.

2133 I never heard or knew of there being any trouble about this caveat of June 21, 1855, until after T. J. W. Robertson had obtained a certified copy of it in August, 1871, and on the morning of the twenty-third day of August, 1871, when, in Mr. Leggett's official room at the Patent Office, I received the paper



of that date at his hands, and which I have spread upon the record in this answer, *in extenso*. I do not believe that there was any thing wrong in that caveat until after the 5th August, 1871, and I do not believe  
 2134 that the Patent Office knew or believed that there was any thing wrong in that caveat until after three o'clock in the afternoon of the 22d August, 1871, because, at about that time, I received in the Patent Office in person the certified caveat and contents of it which I now hold in my hand, having the affidavit of Cyrus A. Sherwood affixed to the front of it, and dated the 5th April, 1872, before A. D. Lyon, notary public, Troy, N.Y. which is Mr. Sherwood's original affidavit of that date, and which caveat and affidavit are already  
 2135 on file in this court in the case of *Campbell v. James and Eddy*, and which is marked in that cause "Complainant's Exhibit, Norton's caveat, dated June 21, 1855, J. A. S. Ex'r., June 29, 1878," and which I again offer in evidence in this cause under the same file-mark as last above quoted.

Objected to as incompetent and immaterial.

*Cross-examined by C. W. BETTS, Esq.*

× Q. 81. In what court did you sue M. D. Leggett,  
 2136 as stated by you?

A. I did not sue M. D. Leggett, and have not made any such statement.

× Q. 82. In what court did you institute proceedings against him, to punish him for libel?

A. In the Supreme Court of the State of New York, designating the place of trial as Rensselaer County.

× Q. 83. Where did M. D. Leggett then reside?

A. That I cannot say. He was Commissioner of  
 2137 Patents at the time, and was the same for some time after that.

× Q. 84. When were these proceedings instituted?

A. In the winter of the years 1873 and 1874, as I now remember it.

× Q. 85. When did he address to you a letter excusing himself, as stated by you in answer to your eightieth interrogatory propounded by yourself?

A. I do not remember the year, but it was soon after he resigned the office of Commissioner of Patents.  
 2138 The letter was dated Cleveland, O., and the envelope post-marked Cleveland, O.

× Q. 86. Where is that letter now?

A. That I don't know.

× Q. 87. Where did you last see it?

A. I saw it last in my possession, at Troy, N.Y.

Defendants' counsel objects to the evidence as to the contents of said letter as incompetent and not the best evidence.

× Q. 88. Was the request which you have quoted  
 2139 from the certified copy of the file, wrapper, and contents thereof, of your alleged caveat of June 21, 1855, in the handwriting of T. J. W. Robertson, and signed by him?

A. I couldn't swear positively as to that. Mr. Robertson brought me the paper. I don't know his handwriting. I don't recollect that I ever saw him write. At the time I wrote across the face of it my assent to his having a certified copy, I supposed it was in his handwriting, from the fact that he presented the  
 2140 paper to me personally at my room in the National hotel, Washington, on the 5th August, 1871.

× Q. 89. How do you know that he filed that request and consent in the Patent Office?

A. Because, on the 22d August, 1871, the Commissioner of Patents furnished me a certified copy of it; and I know that such a paper was presented to me by Robertson on the 5th August, 1871, for my consent that he might have a certified copy of that caveat, and I know that I consented to his having it by writing  
 2141 across the face of it that consent. I signed my name to it; and the certified copy is a *fac simile* of that paper, as nearly so as one can be made, in my judgment. While in Washington in June, 1877, making personal examinations in the files of the Patent Office, and that, too, without the aid of "some *respectable* and *accredited* attorney such as the defendants' counsel, I compared this certified copy caveat with the original paper on file in that caveat in the presence of the Hon. George

H. Williams, complainant's counsel in this cause, and  
 2142 the Hon. Ellis Spear, then Commissioner of Patents.

× Q. 90. That is all you know about it, is it?

A. That is all I can know about it. But I am satisfied that Robertson, or his attorney, Mr. Betts, or some other agent of his, filed that paper in the Patent Office, and on it obtained a certified copy of the caveat, because Mr. Robertson told me in my room in the National Hotel that he had obtained a copy to send to Mr. F. H. Betts, who, at about that time, was spending that part of the summer towards the Catskill Mountains, as Robertson told me,—the truth of which I  
 2143 knew nothing of. I think these circumstances justify me in saying that he filed that caveat in the Patent Office.

× Q. 91. Have you to-day made substantially the same statement in regard to the character and contents of that consent which you formerly made in this cause upon your cross-examination?

A. I think so; but in connection with which I made the statement to-day, I have thought it best to  
 2144 be more particular, and to go more into detail about it. I do not think that there is any material or substantial difference between the two statements. The words and the punctuation of the sentences used may not be the same, and the letter "i" and the letter "t," may not be dotted and crossed as on the other occasion, and I don't know that the examiner has used the same kind of ink. The certified record, however, justifies the statements that I have made to-day about it. When I testified the other day, I testified from recollections covering a  
 2145 space of several years. To-day, however, I have testified with the certified record before me, which, it is fair to propose, gives the matter and dates as the same actually occurred.

I prefer in this, as in all cases, written statements of facts, especially when certified to by a public officer, rather than the memory of man covering a period of so many years. If, on the occasion referred to, there was any thing that does not agree with what I have stated to-day from the certified record, that proves nothing,

2146 unless it be the fallibility of human memory and the  
unreliableness of independent recollections of things  
occurring years previous thereto without any thing in  
the intervening time associating with the memory to  
keep alive and fresh the recollections of mortal man.

× Q. 92. You do not now remember, do you, making any statement in this record in regard to that consent, which statement was substantially different from that which you to-day stated in regard to it?

A. I do not think, and I do not believe, that there  
2147 is any statement of that kind on this record. Should there be one such, however, my last answer explains precisely how it occurred; and before I sign this deposition, I shall do, as all witnesses should do, have the record carefully read to me or read it myself; and, if I find any errors or mistakes, and that, too, without the aid of "some responsible and accredited attorney," such as examining counsel, shall have them corrected by the examiner, under my directions.

× Q. 93. You will not make any alterations in  
2148 that record, as you have already signed the same at the end of the testimony taken before the examination commenced to-day. If you do make any such mutilation of the record, we will see that proceedings are taken against you. I now ask you whether you remember any misconception which you had of the contents of that consent at the time you previously testified in regard to it?

A. At the time of the adjournment of my examination, about three weeks ago, defendants' counsel now  
2149 present notified me that he desired to cross-examine me further: but knowing the uncertainties of human life, and fearing that I might be waylaid and assassinated by defendants' counsel now present, or some one acting with him for that purpose, I deemed it wise and prudent, under all the surrounding circumstances, to sign temporarily so much of my testimony as had been then completed, in order to preserve the same, should any harm befall me during the adjournment; and as I  
2150 signed it under these circumstances, and inasmuch as the examiner has not certified to it, and as the deposi-

tion was not complete at the time it was signed, I shall take occasion to examine it; and, if I find any errors or mistakes in it, I shall, "as sure as the Lord liveth," make such corrections as I deem to be proper and just, notwithstanding the threats and intimidations and the propositions of defendants' counsel in the question to do me harm, or to inflict upon me any personal chastisement, make or cause the examiner on this record to make such corrections as I deem ought to be made.

2151 To the inquiry part of the question I make the same answer that I have two or three times made to the same proposition, and shall make none other, though counsel repeat that inquiry until "the crack of doom."

Defendants' counsel notifies the examiner that he will not submit to have any of that part of the record in any wise altered or corrected, which was taken by him prior to this day and signed by this witness; and he insists that all corrections or alterations of that record, so signed, shall be made at the end of the record, with a statement of the parts containing the errors.

× Q. 94. Do you remember any misconception which you had of the contents of that consent given to T. J. W. Robertson at the time you had previously testified in regard to it?

A. I do not believe that I ever had any misconceptions on that subject. What I said at the time prior to this about that paper, was said giving the substance of it, as I remembered, the same at the time I testified about it. To-day I have testified from a certified record of the caveat and all its contents. Now, if my recollections the other day as to any particular time or matter about that subject is any different from the record produced to-day, it is of no consequence whatever; and I have fully explained in previous answer to-day the manner in which such a thing might have occurred, if it did occur at all, which I very seriously doubt.

2154 If examining counsel will refer me to what I did say the other day on that subject, I could and would then inform him whether I was mistaken. I know I am not

mistaken to-day, if the seal of a department of this government and the signature of one of the officers of the government can be depended on for truthfulness and correctness. I am not to-day so far advanced in education and the things and circumstances of life as to belong to that infallible succession to which, no doubt, examining counsel belongs.

Being human, I have no doubt but that, like other  
2155 human beings, I may make errors, commit blunders and mistakes in life; and no day in life do I forget the fact, "that to err is human, to forgive divine."

If I have made the error suggested by the question, and so rigorously insisted on by examining counsel that even the pilgrims in olden times in their devotions paled into nothingness when compared to the faithfulness and devotion of examining counsel to his clients, I shall not only ask sincerely the charity of his silence, but hope — sincerely hope — that I shall not, for that  
2156 cause, be tried in an *ex parte* manner by Leggett and his commissioner, or be banished from the Patent Office, or be indicted by a grand jury, because it may be that my memory was not quite as good as the certified record now before me, establishing clearly the facts of which I have testified.

× Q. 95. The certified copy of the file relating to the caveat of the railroad printing-press which contains the consent concerning which you have testified, was produced by you this morning from the exhibits in  
2157 the case of Campbell v. James, at my request, for the purpose of cross-examining you upon the same, was it not? and did you not thereupon produce it, and then propound questions to yourself in regard to it, instead of allowing the cross-examination to proceed, as it was about to when I demanded the production of that paper?

A. The certified copy of the caveat stated in the question was produced substantially as stated in the question; and I proceeded to exercise a right that I  
2158 have, under the laws of this country, to make further inquiries about that matter; and believing, as I do believe, that I know something of the persons who in

1871 entered into a vile conspiracy against me and against this very caveat, and believing further that I know the names of these conspirators and the reasons why they so conspired against me and against that caveat, committing fraud upon the public records of this country, and an act of villany and debauchery against the rights of a citizen without parallel in the  
 2159 history of crime and meanness, I judge myself to be better qualified to propound the questions on this record as I have done, so as to get at the exact truth of the personal assault made upon me by defendants' counsel.

I do not believe that the Court, for having proposed these questions, will either refer the matter to Leggett and his commission, or charge the grand jury to indict me at the next term of court for having, in defence of my integrity, my truthfulness, my professional  
 2160 pride and honor, and to spare my wife and children the pain and disgrace of a vile and unmanly attempt to degrade and dishonor me in this court as defendants' counsel has done, simply because I have put my own questions to myself on a subject on which I am perfectly familiar, and of which there can be no impropriety or injustice. Now, when I testified the other day on this matter, I testified from a printed record of this caveat which had become an exhibit in this cause; and to-day, on seeing the original caveat, I thought it better to make *that* also an exhibit in this cause, and to  
 2161 testify from it that I might get those matters more perfect, and beyond any question of cavil or doubt.

I have not in any manner hindered or obstructed any cross-examination on the part of defendants' counsel. Before getting the caveat for the files indicted, I said to defendants' counsel that I had a question or two more to put on the record before the cross-examination would be open for him to proceed with.

Defendants' counsel offers in evidence the certified  
 2162 copy from the files of the Patent Office of the caveat of M. P. Norton, filed June 21, 1855, for railroad printing-press, which concerns the consent referred to, and requests the examiner to mark it in this cause "De-

defendants' Exhibit, Robertson's permission, J. A. S.,  
Ex'r."

Defendants' counsel, in order to prevent the mutilation of the record by this witness according to his threat, now requests the examiner to place upon the record Q. 50, propounded to this witness by himself, and  
2163 the answer thereto, in order that they may stand upon this record as now signed by this witness. The examiner copies that question and answer as they now are.

"Q. 50. Pending that application by Robertson for the extension of his patent of September 22, 1857, did you give him permission to see and examine your caveat file of June 21, 1855?"

"A. I gave him such permission in reply to his request to be allowed to see and examine that file: at the same time of giving this permission, I also gave  
2164 him permission to obtain a certified copy of the entire caveat. A certified copy of such permission is now on file as evidence in the case of Campbell v. James and Eddy, which will be referred to if necessary at the final hearing of this cause."

× Q. 96. Please to point out in the "Defendants' Exhibit, Robertson's permission," the permission which you say you gave him to see and examine your caveat file of June 21, 1855.

A. I have already done so in detail. It is the last  
2165 paper on that certified caveat annexed to the file wrapper. It is a paper in pencil signed "T. J. W. Robertson;" which is his application to me for a certified copy of that caveat, and it bears my consent written across it dated August 5, 1871: and a consent of that kind and an application of that kind is considered to be a consent to inspect the files from which the certified papers are to be taken; but in this particular case, for this caveat, was converted into an application for a patent on the 21st March, 1857, as the file wrapper  
2166 shows, and afterwards that application was withdrawn, and twenty dollars of the thirty-dollars fee was refunded to me by the Commissioner of Patents. This caveat, after the withdrawal that I have just spoken of, became, in my opinion, a public record, removed from



the secret archives of the Patent Office and open to the inspection of anybody who cared to examine it, the same as any other record of the withdrawal of an application for a patent; but for some reason Mr. Robertson presented to me this application, which I did not refuse  
 2167 or hesitate to allow, although I think he might have had the copy without asking me to give my consent. Whether this was considered by the Patent Office to stand the same as a completed, rejected, and withdrawn application for a patent, I do not know. I think, however, that the Commissioner of Patents must have held, that, before Mr. Robertson could obtain a certified copy of that caveat, he must first obtain my consent.

× Q. 97. Did Mr. Robertson, at the time you gave him that consent, ask you for permission to examine  
 2168 your caveat file of June 21, 1855?

A. I think he did, and he did it while cross-examining me as a witness in opposition to the extension of his patent. My present recollections are, that he put to me one or more questions, or else one of his attorneys, Mr. A. J. Todd, put to me a question, in which he asked permission to inspect that caveat file; and, if I remember correctly, my answer was, he could freely do so if the Commissioner of Patents would allow him that privilege. The record of that examination will  
 2169 show whether I am correct in this, or not. I firmly believe, however, that I am substantially correct about this matter.

× Q. 98. You gave no other written permission, either to Mr. Todd or to Mr. Robertson in relation to that caveat, other than that which is contained in the file wrapper, Defendants' Exhibit, Robertson permission?

A. Oh, yes! I gave verbal permission; and my recollection is, that I went with Mr. Robertson to the  
 2170 Patent Office. Mr. Cranch, the keeper of the secret archives, at my request and in my presence, produced the original caveat file for Mr. Robertson to examine. After that these files were taken to the rooms of the examiner having charge of that class of cases, and was there open to inspection by Mr. Robertson, and was

taken there about the time of the date of this request and my consent to it, of which I have spoken. Mr. Robertson's application for an extension of his patent was then pending in that same room before that examiner.

2171 × Q. 99. In whose possession has the original patents to Knibbs been, since its issue?

A. That patent was filed in a case in Troy, in 1874 or 1875 I think; and it was in the safe at "The Troy Times" printing-office, until three or four months ago. I sent for it among other papers; and it was sent to me by Francis and Tucker, proprietors of "The Troy Daily Times." Since then I have had it till it came here. I could tell better as to date by referring to that case, a printed copy of which I have at my room at the hotel.

2172 × Q. 100. It has been out of your possession, then, since 1874 or 1875, until within three or four months ago?

A. While it was in the safe at "The Times" printing-office, I am forcibly struck with the idea that it must have been out of my possession, but not beyond my control.

2173 × Q. 101. Look at the paper which I now hand you, and which is a certified copy of the report of the commissioner in the matter of the charges preferred against Marcus P. Norton by the Commissioner of Patents, and state whether you are the Marcus P. Norton therein referred to.

A. I don't know whether I am, or not. I haven't looked at the paper to see, and don't propose to. You have already put in a printed copy of proceedings against me in the Patent Office, and you have spent, and caused me to spend, about two weeks time over that matter. You examined me at great length about it, I have been cross-examined at great length about it, and I have gone into the details concerning it, given all the facts in relation to it, and this record shows fully all about that matter; and I do not propose at this time, by any trick or artifice on your part, to spend any time to look into the paper, as you request in your question.

If, however, the paper stated in your question be a certified copy of the printed paper which you first put  
 2175 into this case on my cross-examination, having reference to the frauds and marked "Defendants' Exhibit, Norton, December 15, 1879, J. A. S. Ex'r.," I pronounce it to be fraudulent, and a public libel founded upon *ex parte affidavits*, which I knew nothing of until the farce of a trial begun before this man Leggett and his commission,—affidavits of personal enemies whom I did not cross-examine because I was refused that right and privilege by the then Commissioner of Patents, and also proceedings in which I was not permitted to  
 2176 examine any witnesses and in which I made no defence, excepting such as stated by M. D. Leggett in his letter of October 22, 1872, addressed to W. W. Secombe, No. 7 Park Place, N.Y., in which he said: "Sir, in your letter of the 5th inst., calling for copies, you request, among others, duplicates of M. P. Norton's affidavits filed in explanation and defence of charges preferred against him by the Commissioner of Patents, &c. In reply, I have to say that no such papers were filed by him, his defence being verbal.

2177 "The other copies called for have been sent.

"Respectfully,

"M. D. LEGGETT, *Commissioner*."

And being also proceedings in which in an indirect way some of the counsel for defendants in this cause took an active part,—proceedings instituted without the authority of law, and without a single thing in right or in truth to justify those proceedings, which in themselves were *ex parte*, and, as the record of them  
 2178 will show, accomplished that which was designed by the Commissioner of Patents and others aiding him during the pendency of T. J. W. Robertson's application for the extension of his patent of the 22d September, 1857, a certified copy of which has been filed in this cause,—proceedings which I firmly believe were instituted by conspirators in the Patent Office, and out of it, to get rid of my testimony delivered in opposition to the extension of that patent, and also to destroy a pub-

- lic record; namely, my caveat of the 21st June, 1855,  
 2179 and of each and every paper filed therein, but more especially so a certain additional specification, dated on or about the 21st August, 1855, which but for those illegal and foul proceedings, would certainly have prevented the extension of the Robertson patent, as it was extended by this same Commissioner of Patents on the 22d September, 1871, a certified copy of which extension is now on file in this cause. This paper which you hand to me in the way you have at this late stage of my examination, not only in violation  
 2180 of that decorum that should always be practised by reputable attorneys in carrying on the business of their profession in the courts, but also in plain violation of the well-settled and established law and rules of evidence, and intentionally so on your part, as I believe, I say, this paper so brought forward and put into this case covers the same identical language and matter found in defendants' Exhibit, December 15, 1879, J. A. S., Ex'r. I characterize it and stamp upon it the same language or the same words and language  
 2181 used by me on this examination that I did with reference to the printed exhibit that you put in evidence on my cross-examination, December 15, 1879, both of which are false, fraudulent, and a vile calumny on the part of those who instituted the same, or took any part directly or indirectly in prosecuting them against me in the Patent Office after the application had been made by Robertson for the extension of that patent, and before the extension of it was granted on the 22d September, 1871, as I have before stated.
- 2182 The charges referred to in these two papers are dated the 29th August, 1871; while the Robertson application for an extension of his patent was pending before this same Commissioner of Patents, and those proceedings were terminated by that same commissioner, September 18, 1871, just five days before the expiration of the first term of the Robertson patent, as by law provided. Now, it will be observed that this same commissioner extended the Robertson patent for a term of seven years on some day after September 18, 1871,

2183 and before the expiration of the twenty-second of that same month. These papers to which you have called my attention show the great care taken by the Commissioner of Patents, and by this man Robertson and his attorneys in that application, to have those proceedings terminated by the commissioner in time, just before the expiration of this Robertson patent. They could not have extended beyond that date; namely, the 22d September, 1871. Now, it will be again observed that this summons of the Commissioner of Patents for me to appear before him, to answer to charges made by him against me of about all the crimes known in the catalogue of crime excepting those of murder and adultery, and the time when thus to appear in those great charges was originally fixed for the 8th September, 1851, at 10 o'clock A.M., which was simply an order "*to show cause*," but which was afterward turned into a solemn and ridiculous farce, misnamed a trial, and that, too, without any law to justify it.

I wish particularly here to call the attention of the  
2185 Court to the fact, that between the date of the time fixed for this mockery upon justice, and the time when the farce culminated into a fraud and a libel, there were just nine days of intervening time; and it will not be presumed that nine days time upon so serious charges as these are said to be, would be any more than sufficient for defendants' counsel to prepare an ordinary brief, much less be it so when you consider that there were eight of weighty and bombastic charges set out in each of these two papers.

2186 I wish also here to request the attention of the Court to another fact, that these grave and serious charges, numbering eight in all in the paper handed me in the question, bear date the 29th of August, 1871, which was received by me on the thirtieth of that month, fixing the 8th of September following as the time when this farce and outrage was to commence.

It will be observable that there was also a period of just eight intervening days between that time and the time set for this so-called trial to commence. Now, I  
2187 ask the Court or anybody else, if there be on the face

of this paper, even the smallest of nothingness of a fair show to prepare and make a proper defence to such kind of charges, and especially so when the person accused is about four hundred miles from his home; and I will also take this occasion to inquire of the Court or anybody else, if the seventeen or eighteen days time that I have named from the time of making the charges to the hour of conviction has in it the least show of even ordinary decency, or whether it be more like the  
 2188 times of Emmett and the Jeffreys?

I also take occasion in this answer to state that this paper which counsel handed me at the time he put this question, shows that this man Leggett instituted those three charges, selecting himself out of his paid examiners in the Patent Office a commission of three persons, without a particle of law to justify him in making that selection or instituting any such commission; and it also shows that the same man who instituted the charges appointed this illegal commission, and conducted, or gave directions for the conducting of, that  
 2189 infamous trial, was the same man who indorsed by his own signature the findings of that commission, and whose villany, and the villany of those associated with him, including the counsel in the Robertson case, not yet having been satisfied, having done all this, went on to say in these two papers, "It is therefore adjudged;" and under three distinct statements makes an order in violation of law, with the full knowledge of the unfairness and injustice that he had committed, signs those  
 2190 three findings in his own name, and then, without notice to me, skulked away to the office of the Secretary of the Interior, Mr. C. Delano, and obtained his *ex parte* approval of a matter of which he knew nothing, never having examined a single paper on the case, as he subsequently told me, but simply approved the paper presented to him by Leggett, the commissioner, without knowing any thing about it excepting what Leggett told him.

Inasmuch as this piece of infamy has been presented to me again in the manner stated in the question, and in a most offensive way, too, I will take occa-  
 2191

- sion to say in this answer that not only were these charges preferred by Leggett, and the proceedings conducted by him in his own official room in the Patent Office, or under his immediate directions, and not only were those charges found by this commission of his own appointing, approved by him in his official capacity, and not only did he sit in judgment as judge, jury, and dictator in a case and upon charges of his own
- 2192 making, but this same man, thus clothed by himself in disgrace and infamy to any fair-minded person, also came down from the judgment-seat stripped of his judicial ermine, and made an *ex parte* affidavit against me (a certified copy of which, if it can be obtained at the Patent Office, I will obtain and file in this cause), upon which affidavit he sat in judgment against me in his official capacity, refusing me the privilege of cross-examining him, as to the matters he had stated in his *ex parte* affidavit: so that here we have the beautiful
- 2193 spectacle of a man in his official capacity preferring charges of a serious character against another man, naming *ex parte* the judges whom he desires to try those charges, himself furnishing *ex parte* affidavits of such things as he wants to prove, denying the accused the right of cross-examination of the men who made those affidavits, himself testifying through an *ex parte* affidavit, about which he refuses the accused the right of cross-examination of him, and then going back to the judgment-seat in the halls of a Pontius Pilate, and
- 2194 sitting as judge *ex parte* upon the charges of his own creating, upon the evidence of his own producing, upon the findings of the commission of his own creating, and then going away to the Secretary of the Interior, who appointed him to office, to get his approval and sanction of such proceedings. I say, if there be or ever has been a more disgraceful, fraudulent, foul, infamous, and diabolical proceeding since the murder of Cain to the present time, the books fail to bear record of it. I say, any man who will deal in
- 2195 any such proceedings as those by the obtaining of any printed copies of them, or the obtaining of any certified copies of the same, and thrust them upon a man

under cross-examination in any cause, is, in my opinion, of the same kind and character of the man as those records themselves show this man Leggett to have been; and I believe him not only to be unworthy of the professional name he bears, but not a fit or proper person to have a habitation among men, because I firmly believe that such person must know, if he knows any  
 2196 thing, that a careful inspection of those papers will show of themselves those proceedings to be of the kind I have characterized them.

At the same time, in fairness to the Court, I would have the Court to understand that I have some feeling in this subject, that I have some smartings under these outrageous proceedings and injustice to me, and that I have a deep sense of right, of propriety, and of fairness in the conducting of any proceedings, either in court or out: and that I have also been compelled to  
 2197 bear these same sorrows in another case in this court, namely, in the case of *Campbell v. James*; and now, after a decision in that case in this court, those same charges are again thrust at me in a cross-examination. Of course I look upon it and regard it and feel it to be not only an insult to me, but to my home, my family, my friends, and my professional life. If, therefore, I have measured out this matter in strong language and branded the same in strong words, the Court will, I believe, under such circumstances excuse me, if, seem-  
 2198 ingly, I have been too harsh or too severe in some of the terms that I have used. However, I feel and I know I have spoken the truth, the whole truth, and nothing but the truth, so far as I have testified in this cause about these matters or any other matter.

I wish further to add, that it will be seen from the dates which I have given as to matters pending in the Patent Office, that, had I been permitted to cross-examine witnesses, or to take testimony here or there in my defence of those charges and of my good name and reputation,  
 2199 it could not have been done after the time when those charges were made on the 22d September, 1871, when the Robertson patent that I have named would have expired by the limitations prescribed by the patent statute law.



Of course, in order to get the testimony which I had given in opposition to that extension, — by my own deposition as well as by my caveat of June 21, 1855, it was out of the way as evidence, — it was necessary to have all proceedings brought to a close previous to the 22d September, 1871, otherwise this Robertson patent could not have been extended, but must have expired as by law provided. Therefore I believed then, I believe now, and ever since then have believed, that those charges, and that so-called trial, and the so-called judgment therein, were but the culmination of a plan arranged and agreed upon between this man Robertson and his attorneys and the Commissioner of Patents and the examiner in the class to which the Robertson patent belong, and the then chief clerk of the Patent Office, to do and perform precisely what was done, as shown by the two papers referred to in the last question and in this answer. In like manner I believe that this conspiracy was thus entered into between the 5th August, 1871, and the morning of the twenty-third day of that same month and year.

Viewed in the light of candor and of impartial justice, with a desire to find the truth and only the truth, I cannot see how anybody can fail to look upon those proceedings substantially the same as I have and do look upon them, and as I have testified about them, and also to come to substantially the same conclusions, foreshadowed by the statements I have made during the whole of this examination having reference to them.

I have changed my mind with reference to the examination of the paper stated in the question, and will now look at it; and, having looked at it, I believe that it is substantially the same, as to the matter it contains, as that of the "Defendants' Exhibit, Norton, December 15, 1879, J. A. S., Ex'r. On further examining this document, I find that the last part of the defendants' printed exhibit, filed December 15, 1879, is omitted in the paper referred to in the last question. Whether there be any other material omissions and differences between the two exhibits, I am not now prepared to state. It will therefore be difficult to de-

termine which is correct, as both purport to emanate from the Patent Office, so far as the heading of each is concerned. However, each of them are none the less of that infamous and libellous character that I have  
 2204 fixed upon each of them during this examination; and since examining it I do not change any thing I have said with reference to it.

Defendants' counsel offers in evidence the certified copy referred to in the last question and answer; and the same is marked "Defendants' Exhibit, certified copy Norton, J. A. S., Ex'r."

Adjourned to Wednesday, January 28, 1880, at 3 P.M.

2205

NEW YORK, January 28, 1880, 3 P.M.

Met pursuant to adjournment.

Present — Counsel as before.

× Q. 102. Did you ever ask for a re-hearing of these charges against you before the commissioner, or did you ever appeal from that decision, or did you ever after that decision take any steps to prove before the Patent Office that there ever had been an original  
 2206 caveat paper dated August 21, 1855, similar to the one which the commissioner then pronounced a forgery?

A. If you can tell me what use there would have been in asking for a re-hearing before this man Leggett, as Commissioner of Patents, I wish you would do so. No, sir: I was not ignoramus enough to be caught in any trap of that sort. Why, I had made the great mistake in attending to those charges in the first instance as the sequel has proven; and you cannot suppose that I would again make a similiar mistake, by  
 2207 asking for a re-hearing before such a man as the records show Leggett to have been.

If you know of any way by which an appeal could have been taken, or where to appeal to in such proceedings as those were, you must possess the wisdom of a Solomon; for I confess I know of no place to have appealed to, or in what manner to have made an appeal

in those proceedings. Neither do you. Hence the foolishness of your question on that subject.

2208 You ask me substantially, if after that decision made upon *ex parte* affidavits, all of which, without a single exception, if my memory serves me correctly, were *ex parte*, and were signed and sworn to between the evening of the 22d August, 1871, and the 29th of that month and year, the date of those preferred charges, as you see those *ex parte* affidavits were first made and signed and sworn to; then came the diabolical charges from 1 to 8 inclusive; then came the preparation of perhaps some more *ex parte* stuff; then came the appointment of a commission out of the flock and  
 2209 fold over which Leggett was shepherd, commander, and "boss;" then came the labors before that commission, which, according to Leggett's statement in Defendants' Exhibit, Norton, December 15, 1879, occupied the enormous length of time of two days or thereabouts. Of course that labor must have equalled the labor of a mountain that brought forth a mouse. On so grave charges as these were and are, your credulity must be of a most extraordinary character, and your judgment must equal that that would  
 2210 come from an ordinary lunatic asylum, if you would for one moment suppose that I would, under such circumstances, "take any steps to attempt to prove before the Patent Office that there ever had been an original caveat paper dated the twenty-first day of August, 1855." Why, sir, the same immortal Leggett, before he had become corrupted, in my opinion by Robertson and his attorneys, clamoring with intensified action at the Patent Office for the extension of his patent, as I before stated, without one word of objection  
 2211 or hesitancy, delivered to me a certified copy of this very paper named in your question as being dated August 21, 1855, on the afternoon of the 22d August, 1871, and that, too, a few hours before he made his infamous order against me dated the twenty-third day of that same month and year. And from eight to fifteen times previous thereto I had had certified copy of that caveat containing that same paper; and more

than this, the Patent Office shows that a paper of this kind was filed in the Patent Office, in that caveat, on  
 2212 the 25th August, 1855; and nobody ever doubted or questioned the truthfulness of that original paper until after August 5, 1871, when Robertson and his attorneys, one of whom is counsel in this cause for the defendants, appeared before the Commissioner of Patents, urging and demanding the extension of the Robertson patent, as I have before stated. Why, sir, for me to have taken the steps suggested by your question, under the circumstance I have stated, would have been worse than madness and folly; and if you know any  
 2213 thing of human character, or of things reduced to so-called evidence, or of law, when applied to a case of this kind, you must have known at the time you put your question, that, had I done as you suggested, I would have met with about the same kind of success that you would meet with were you to attempt to walk upon the waters, as did Peter in olden times on the waters of the "sea of Gennesaret."

As to the last part of your question, which you call a "forgery," the Commissioner of Patents did not pro-  
 2214 nounce that caveat a forgery. He did not go farther than to say substantially, in his summing-up of that matter, "This paper does not, therefore, form a valid portion of the above-named caveat," as will appear by his writing upon the back of that paper.

To be more particular as to what he did say about it, I will have the examiner write *in extenso* the indorsement on the back of that paper as a part of this answer:—

"Exhibit D. This paper marked 'Exhibit D,' after  
 2215 due notice to M. P. Norton and trial had before a commission appointed by the Commissioner of Patents, was, by the said commission, adjudged to be fraudulent, and to have been surreptitiously introduced into the caveat file of M. P. Norton for a railroad ticket printing-press, filed June 21, 1855.

"In the order of the Commissioner of Patents, dated September 18, 1871, and approved by the Secretary of the Interior, in the case of the trial of M. P. Norton

for gross misconduct, see the finding of the commis-  
 2216 sion as to charge 4.

"This paper does not, therefore, form a valid portion  
 of the above-named caveat.

"M. D. LEGGETT,  
*"Commissioner of Patents."*

The answer of witness not being completed, and it  
 being now 6.15 P.M., the witness will finish his an-  
 swer to-morrow morning, commencing at 10 o'clock  
 A.M., to which time this examination is adjourned, de-  
 2217 fendants' counsel being absent.

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NEW YORK, January 29, 1880.

Parties met pursuant to adjournment.

Present — Hon. Marcus P. Norton, counsel for com-  
 plainant; Mr. Hyde as representative of counsel for  
 defendant.

Examiner's note. The witness continues his incom-  
 2218 pleted answer of yesterday.

It will be seen by the indorsement which the ex-  
 aminer has just above quoted, and which is taken from  
 "Complainant's Exhibit, M. D. Leggett, Fraud No. 2,  
 August 31, 1878, I. B., Ex'r," which is an exhibit now  
 on file in this court in the case of *Campbell v. James*  
 and *Eddy*, and which I make an exhibit in this cause  
 under the same marking and filing as last above  
 quoted, that the Commissioner of Patents, M. D. Leg-  
 gett, "after due notice to M. P. Norton, and trial  
 2219 had before a commission appointed by the Commis-  
 sioner of Patents," states: —

In regard to this statement that I have quoted from  
 that indorsement, I have this to say: that those state-  
 ments so quoted are false and untrue in point of fact,  
 excepting that part which says that that commission  
 was appointed by the Commissioner of Patents. That  
 part is perfectly true; for he did appoint such a com-  
 mission without my consent or knowledge, and also  
 without authority of law; for I challenge anybody and

- 2220 everybody to produce any law authorizing the Commissioner of Patents to appoint a commission of that kind for the purposes of considering any charges that the Commissioner of Patents might prefer against anybody. Now I again repeat, that when Mr. Leggett says, as he does say by that indorsement, that, "after due notice to M. P. Norton and trial had," he says that which is false and fraudulent in my opinion; for it appears from the records in this matter that those libellous charges were dated the twenty-ninth day of
- 2221 August, 1871, and served on me on the following day, and that the findings of Leggett's Star Chamber commission are dated the eighteenth day of September following, embracing a period of about seventeen intervening days. Now anybody can see, in my opinion, that those alleged charges were neither duly noticed and served on me, nor was there a "trial" duly had before that commission. It will further be seen by the evidence that the so-called evidence produced before that commission in attempting to sustain those charges
- 2222 was chiefly made up of *ex parte* affidavits, most of which were dated and sworn to, as I remember the fact, prior to the date of the charges of the 29th of August, 1871, and that there was not only no cross-examination of those so-called *ex parte* witnesses, but a cross-examination of those persons was absolutely refused and denied by Mr. Leggett in his official capacity. The records and evidence on this matter show that I was even denied by that commissioner the privilege of calling Mr. Cranch, the keeper of the secret
- 2223 archives of the Patent Office, where all caveat files were kept; and I was also denied the privilege of going to Troy, and to the towns of Tinmouth, Middletown, Rutland, and Poultney, in the State of Vermont, and other places where I had important witnesses which ought to have been examined in my defence to those charges, and which, had they been examined, would have supported the sworn answer which I made and filed to those charges in the Patent Office on the
- 2224 fourteenth day of September, 1871, just four days previous to the findings of this commission created by

Leggett in the manner that I have before stated, which answer is found in the case of Robertson against the Secombe Manufacturing Company in this court as "Defendants' Exhibit, H, H., R. E. S., Ex'r.," and which was certified to by J. M. Thatcher, Acting Commissioner of Patents, on the nineteenth day of October, 1872, and which I make an exhibit in this cause for the purposes of reference as to any matter contained in it, and shall print the same as evidence in this cause.

2225 Again I say, under such surroundings as these that I have stated to-day, you must regard me as wanting largely in common sense if you think that I would again fall into a snare and trap that had before been set, and surrounded by a set of disreputable and dishonorable persons, as I believe those to have been who concocted those proceedings, and carried them out in the manner which the record itself shows them to have been. Again I say, that to have made the application of which you speak would have been not only

2226 folly, but useless, and a waste of time and money.

I have further to say, that it will be seen from the records of those proceedings before that so-called commission, that the issues for a trial were not joined until the filing of my answer in the Patent Office against those charges on the fourteenth day of September, 1871; that being the day when I signed and made oath to those charges before Mr. Charles C. Callan, a notary public in the city of Washington. From the day of the date of that sworn answer, allowing it to have

2227 been filed in the Patent Office on the day when it was sworn to, to the time when the "Jeffries," as a commission, made their report or findings; viz., September 18, 1871, there was just three intervening days, that is to say, between the time of the joining of issue and the date of the so-called conviction there were just three days, and it is fair to suppose that a part of that time at that season of the year was occupied by night. I will say more: the business hours in the Patent Office at that time usually began at nine o'clock A.M., and

2228 ended at about three o'clock P.M. each day. This would give eighteen hours time to take testimony and

to try those charges. I have no doubt but that that time was quite sufficient for this man Leggett, Robertson, and his counsel associated with him in procuring an extension of his patent, as I have before stated, in which to do their dirty and disgraceful work of destroying my caveat of June 21, 1855, as a piece of evidence, and also in devising means whereby to overcome the evidence which I had rendered in opposition

2229 to that extension, commencing August 21, 1871, at room No. 113, National Hotel, city of Washington, before Charles C. Callan, a notary public, before whom Robertson and one of his counsel appeared and cross-examined me. I say I have no doubt but that eighteen hours time was sufficient to carry out this fraudulent and infamous work of attempting to get rid of the effect of those two pieces of evidence, viz., my caveat and my own deposition; but I will leave it to

2230 this Court to determine whether, from the time of the joining of the issues in that matter, viz., September 14, 1871, to the time of conviction, viz., the eighteenth day of September, 1871, or even say the seventeen days intervening time from the date of the commissioner's charge, viz., August 29, 1871, to the time of conviction, September 18, 1871, was a sufficient time even to prepare for a defence of so grave and serious charges as those seem to be. I wish here again to call the attention of the Court to the fact that this conviction, so called, was had just four days before the expi-

2231 ration of this Robertson patent, and that after the commissioner had completed that fraudulent and dirty work, and before the twenty-second day of September, in the same month, he wrote an order by which he extended the Robertson patent, which had been argued before him by one of the defendants' counsel in this cause. Again, it will be seen that the infamous work of those conspirators was of necessity to be, and was, completed before the twenty-second day of September, 1871. Had it not been done so, Robertson's patent

2232 would have expired by the limitations of law on that day, and could not afterwards have been extended by the Commissioner of Patents.



In giving further reasons in answer to your question to show why it would have been utterly useless in me to have done as suggested by your question, I wish to say that I hold in my hand a certified copy of the letter mentioned in "Defendants' Exhibit Norton, December 15, 1879," at charge or specification No. 3, on the back of which the great and good Leggett wrote the following: to wit, "This paper (marked 'Exhibit C,' and to which the paper marked 'Exhibit D' is attached) does not pertain to the caveat file of M. P. Norton for a railroad ticket printing-press, filed June 21, 1855, but does pertain to the caveat file of M. P. Norton for a machine for mailing and folding letters filed October 20 and 27, 1853. See the indorsement upon the back of Exhibit D, hereunto attached. M. D. Leggett, Commissioner of Patents."

Now, I wish to show to this Court the absolute and positive fraud of this indorsement, about which there can be no dispute, no cavil: and here it is; viz., —

This letter is dated Tinmouth, Vt., August 21, 1855: it is addressed to the Commissioner of Patents. The additional description headed "*Additional paper to railroad printing-press*" is also dated Tinmouth, Vt., August 21, 1855, — the date of each paper is precisely the same day of the same month of the same year, and at the same place: viz., Tinmouth, Vt., August 21, 1855. This letter was received and filed in the Patent Office on the twenty-fifth day of August, 1855, four days after the date of it, which would give sufficient time for the two papers to pass by the United States mails from Tinmouth, Vt., where they were each written, to the United States Patent Office at Washington. The reception of this paper by the Commissioner of Patents, and of his filing it in the Patent Office on the twenty-fifth day of August, 1855, are clearly shown as an indorsement upon its back.

My caveat of the 20th of October, 1853, was at that time about two years old as a record in the Patent Office. As notice to all applicants for patents, on the subject matter embraced in it, that caveat had expired on the 20th of October, 1854. This letter was never

in the file of the caveat of October 20, 1853; for I had on several occasions obtained certified copies of it with other papers from the caveat file of the 21st of June, 1855. The certified copy of that caveat is now on file in this cause under the certificate of the Commissioner of Patents of the date of August 22, 1871, clearly showing that this very Commissioner of Patents at that time recognized and admitted this very paper and the one attached to it of the same date as being a valid and subsisting record in that caveat file. More than this, of my own knowledge I know that that letter accompanied to the Patent Office the original paper of the same date, — a certified copy of which is now in evidence in this cause.

Now, under these circumstances so fraudulent as they certainly are, and designedly as I believed them, and now believe, do you suppose for one moment that I would have been so unwise as to have made an application of the kind suggested in your question? If you do, you have a very small knowledge concerning human nature, if you suppose that a person being once burned will again run into the same fire for the purpose of being burned again.

Defendants' counsel objects to all that part of the witness's last answer which is a re-argument of the case had before the commissioners, as irresponsive, irrelevant, and incompetent.

*Re-direct.*

Q. 103. State whether you have recently examined the records in the matter of the application by T. J. W. Robertson for an extension of his patent of the 22d September, 1857, on hand-stamp, No. 18,249.

A. Yes: a printed record of my deposition in that matter delivered in Washington, commencing August 21, 1871, room 113, at the National Hotel in that city, and ending about 10 o'clock of the evening of the 25th August, 1871, which printed record I now have before me.

Q. 104. State whether, during the taking of that deposition, application was made to you by T. J. W

Robertson for your permission to see and examine your caveat files of the 21st June, 1855, and state by whom said application was made, if made by any one at that time other than Robertson.

A. Yes: such application was made both by Mr.  
2241 Robertson and his counsel then present, and it was several times repeated during that examination. It was first made in the following words: namely,—

“Counsel for application requests the witness to give an order upon the commissioner that access may be had to the files of such caveat, and that such caveat file may be produced at the hearing for the parties’ examination.”

This request was made on the afternoon of the 22d August, 1871, and was made by Robertson and his  
2242 counsel then present. I made an answer to that request in the following words: namely,—

“Witness, in answer, says: That he is not the Commissioner of Patents, and has no control whatever over the records of the Patent Office; and, further, that the witness, on the fifth day of August, 1871, invited the applicant, T. J. W. Robertson, into the presence of the caveat in question, who took the same and examined it in the presence of the witness, and of Mr. Cranch, who has charge of the caveat files. Mr. Rob-  
2243 ertson thereafter made an order upon the Commissioner of Patents for a certified copy of the caveat file and contents. The witness at once gave his consent that such a copy be furnished. So far as this witness is concerned, he has not the slightest objections in this world that any one who may desire it shall examine and re-examine this caveat file and its contents.

“The witness, in further reply, states that, in obedience to the published rules of practice in the Patent Office, has obtained a certified copy of the caveat, and  
2244 filed the same as evidence in this case; and that, if the Commissioner of Patents will permit it, the witness offers in evidence the original caveat itself, including the caveat file and its contents.

“Counsel for applicant here renews his request for an order or request upon the commissioner, that counsel

may view the original caveat and file, itself; and counsel states that he will present such order or request upon the commissioner, and if then an interviewing of the caveat file is denied, no harm will be done, except in the waste of a little paper and ink.

2245 “The witness, in reply to the above proposition or interrogation, gives the same answer as before given: ‘I will go with the counsel to the Patent Office, and he may there examine the caveat file in my presence, and in the presence of the officer in charge of the caveat files. If there be any other mode usually practised in the Patent Office for the inspection of its secret archives, the witness will most cheerfully conform to the same, whenever the counsel, who proposes the question, shall bring to witness, from the Commissioner of Patents, evidence to show such other and different mode of procedure.’

“Counsel for applicant asks such order or request on Commissioner of Patents, coupled therewith, if witness desires, a statement that such caveat may only be viewed in presence of the proper officer or officers of the department.

2247 “The witness states that he has stated from the beginning, and now repeats the same, that he most cheerfully consented, and would consent, to any order that the Commissioner of Patents might make in the premises; and that anybody and everybody might examine and inspect the caveat and all its papers in question, if the Commissioner of Patents should permit the same to be done.

2248 “Witness further says, that the counsel now proposing the question was present during a greater part of the examination yesterday; that the same counsel called upon witness at his hotel during the early morning of to-day, and an interview was had, and that he also met witness twice at the Patent Office to-day; and that on neither occasion did he make any request of the kind now made; that, had he done so at the Patent Office, the witness would have taken him into the presence of the caveat, and allowed, so far as witness was concerned, a full and free inspection of said file. Witness

is willing, as before stated, at any time to make any order in the premises that he has the right to make."

I further find, on examining this deposition from  
 2249 which the last above quotations were made, the following: "I told him frankly that I did not then believe that he was justly entitled to that patent; that it was not his invention, but one of my own, and that such had always been my opinion since the granting of the patent. He asked if I intended to oppose his application, to which I replied, 'I do;' he wanted to know what my defence would be. I frankly told him the main points, and that I would show him the Patent-Office records to justify all I had said. Thereupon we to-  
 2250 gether went to the examiner's room, No. 23, — Mr. Stewart's, I think, — and there I showed him my pending cases under sect. 35 of the Act of Congress, approved July 8, 1870. From there we went to the room known as the room of patented files; we there examined my patented file of August 9, 1859, and another patent file of mine dated January 14, 1862, and I think there were some other files examined at that time. We then went to the room containing the caveat files: four caveat files of mine were there pro-  
 2251 duced at my request, two of which were examined by Mr. Robertson; one was dated in 1853, and the other one June 21, 1855; the last one named is the one of which the certified copy filed in this case was taken.

"I did not at that time examine those caveats, as I had no occasion so to do, beyond the mere fact of seeing that Mr. Robertson had the proper files.

"I have never at any other time examined those files, except during the summer of 1870. Mr. Secombe, President of the Secombe Manufacturing Company,  
 2252 and Mr. Holt, superintendent of the manufactory, who having come to Washington expressly to see me in regard to my inventions for dating and printing, and for cancellation of internal revenue stamps, I went with them, during their business here, to the Patent Office, and there asked to be produced my caveat files containing and covering the inventions about which I have been examined.

“They examined carefully and most thoroughly those files, and also the drawings and papers, and the model  
 2253 filed in the application of Norton and Haskins of October, 1857, and both expressed themselves as entirely satisfied that I was the original and first inventor of the improvements contained in the cases, and filed above referred to; this was, I think, in the fore part of the month of June, 1870, or else the latter part of May, 1870, I am not quite positive about it: afterwards Mr. Secombe desired of me a duly authenticated copy of that caveat, and two copies were procured under an order made by me August 10, 1870.

2254 “Some days after my conversation with Mr. Robertson, as above stated, he desired to know of me if he would be permitted to have a copy of my caveat of June 21, 1855, it being the caveat referred to in this examination.

“I replied that he certainly would be allowed a copy of it if he desired it. He wrote an order on the commissioner, dated August 5, 1871, upon which I wrote the following words and figures: to wit, August 5, 1871. I hereby consent that Mr. Robertson have a duly  
 2255 certified copy of my caveat herein named. Marcus P. Norton.’

“This copy, he informed me, he desired to submit to his counsel, Mr. Betts of New York.

“After having received his reply, founded upon an examination of the caveat, and thereupon would advise me whether he would go on with his present application for extension, or not, I did not see or hear from him again until the morning of August 15, current month, when I met him at the Patent Office, where I  
 2256 was examining the extension files in this case; and, having learned from that examination that Mr. Robertson had, on about the 8th of August, filed several depositions—two, I think—in support of his petition, I therefore immediately filed my notice of opposition and reasons for the same in the case.”

This was my testimony on that occasion, as it now appears from a printed record of my deposition at that time; and I now and here to-day affirm and confirm

each and every of the quotations that the examiner has  
2257 made from that deposition to-day.

If Mr. Robertson ever has denied any of these statements under oath or anywhere else, it has never come to my knowledge, and of course I have no knowledge of any such denial. My present best recollections, however, are that he did not deny, or attempt to deny, any of those statements, although he attended that examination and heard what I had testified to. That deposition was filed in the Patent Office about the  
2258 twenty-fifth or twenty-sixth day of August, 1871, some two or three days previous to the date of the charges and specifications contained in defendants' Exhibit, Norton, December 15, 1879, J. A. S., Ex'r., and also in defendants' Exhibit, certified copy, Norton, January 27, 1880, J. A. S., Ex'r., the date of which is August 29, 1871. This record evidence shows that I complied, without objection, to every request made, both by Robertson and his counsel, with reference to an inspection of my caveat files of June 21, 1855, and that thereafter Mr. Robertson did inspect those files, by my permission,  
2259 prior to August 23, 1871; the request having been made for such inspection on the twenty-first day of August, and also on the twenty-second day of August, 1871, as this printed record shows.

This record also shows that I arrived in Washington on the 26th July of that year, and that within from four to six days thereafter I had an interview with Mr. Robertson about the proposed extension of his patent, and that I went with him to the Patent Office at that time, and showed and fully explained to him all that I  
2260 was then doing to protect by patent, under the Act of July 8, 1870, the very invention contained in this caveat paper of August 21, 1871, as I then had several applications pending under that Act, whereby to obtain one or more patents on the inventions shown in that caveat paper. This evidence also shows that I, on that occasion, went to the room where the caveat files were kept, with Mr. Robertson, and there showed him, through the proper officer in charge of that room, four different caveat files of mine, two of which were then

2261 and there examined by Mr. Robertson, one being dated October 20, 1853, and one June 21, 1855; and Mr. Robertson made a full and complete examination of those two files. I afterwards gave him my written consent to obtain a certified copy of the caveat of June 21, 1855.

I now hold in my hand a certified copy of the caveat last above named, certified to on the 12th August, 1870, by Samuel A. Duncan, Acting Commissioner of Patents. It contains a copy of the identical letter, 2262 dated Tinmouth, Vt., August 21, 1855, and also a copy of "Additional paper to railroad printing-press," dated Tinmouth, Vt., August 21, 1855, being the same date of the letter to which I have just referred, and each addressed to the Commissioner of Patents, and each of the originals of which were signed by me with my full name, as usually written by me, and each were enclosed in one envelope, and thereon securely sealed; and the package thus made up was by me addressed to the Commissioner of Patents, Washington, D.C.; and 2263 that package was by myself deposited in the post-office at Tinmouth, Vt., and the postage thereon paid either on the twenty-first or twenty-second days of August, 1855; and each paper contains the same identical matter that is now found in the certified copies which I hold in my hand.

Between the twelfth day of August, 1870, when I obtained the certified copy of that caveat which I now hold in my hand, and the twenty-second day of August, 1871, when I obtained another certified copy of 2264 the said caveat, I had occasion to obtain one or more copies of this identical caveat; and on neither of the occasions when I did obtain certified copies was there ever a word of objection on the part of the Patent Office, or any hint or doubt expressed in that department by any officer therein, that there was a single thing about any of the papers in that file that were improper, or that any of them came there in a surreptitious or any other manner than in a legitimate, lawful, and honest way, on my part, as well as on the part 2265 of the Patent Office. Prior to the 12th August, 1870,



I had, on one or more times, of different dates, occasion to have certified copies of these same papers, of this caveat of June 21, 1855, and those copies were always furnished and delivered to me without a word or even a suspicion against them that there was any thing in and about them that was not perfectly proper and just.

*Never*, until after the 26th July, 1871, when I had this conversation with Robertson, showed him that caveat file, and subsequently gave my consent to the  
 2266 Commissioner of Patents that he might have a certified copy of that file and every paper in it, — nay, not until the morning of the 23d August, 1871, — did I know or hear from any source whatever that there was even a pretence of there being any thing wrong concerning that file or any paper in it; and that information came to me directly from M. D. Leggett, then Commissioner of Patents, just immediately after he had handed to me the order of his meanness, bearing date that day; namely, the 23d August, 1871, which had been made  
 2267 by him before my interview with him on the morning of that day, which was the second time that I had seen that person to know who he was.

I produce, and offer in evidence, the certified copy caveat, sealed by the Patent Office the 12th August, 1870, and signed by Samuel A. Duncan, Acting Commissioner of Patents, and which is now on file in this court in the case of *Robertson v. The Secombe Manufacturing Company*, as “Exhibit A, defendant, June 24, A.D., 1872;” and I desire the mark of identification to stand as it now appears, and which the examiner remarks in this cause, Complainant’s Exhibit, No. 400, J. A. S., Ex’r., January 29, 1880.  
 2268

Counsel for defendants ask complainant’s counsel if he intends to offer in evidence the alleged printed record from which the quotations contained in the witness’s last answer have been made.

Counsel for complainant replies that he does not, from the very fact that the quotations that have been made have been repeated by the witness as a part of  
 2269 his testimony here as answer to the last question which witness not only read from the printed record, and

which he afterwards ratified and confirmed as and to be his testimony so far as the same goes in answer to the last question.

Defendants' counsel objects to the introduction of any quotations as incompetent from any book or paper which is not submitted to the Court.

Complainant's counsel will furnish the book from which he quoted, at any time that the Court desires to  
2270 see it.

Complainant's counsel offers in evidence an affidavit made by the witness on the twenty-second day of August, 1871, before Charles Cons. Callan, a notary public, it being an original affidavit now on file in this court in the case of *Campbell v. James and Eddy*, and it is marked "Complainant's Exhibit, Norton, No. 12, J. A. S., Ex'r., June 29, 1878;" and also an original affidavit attached thereto, made by Charles Cons. Callan on the 14th September, 1871, before H. Clay Johnson, a notary public, and which is marked and filed in  
2271 the same cause as "Complainant's Exhibit, Norton, No. 10, J. A. S., Ex'r., June 29, 1878," which is an affidavit proving the genuineness and correctness of the affidavit made by this witness on the 22d of August, 1871, and which is attached thereto, and which is above referred to as Exhibit, Norton, No. 12. Complainant's counsel also offers in evidence an original letter, written by the witness, addressed to the Commissioner of Patents, and dated National Hotel, Washington,  
2272 D.C., August 23, 1871, and which is on file in this Court in the case of *Campbell v. James and Eddy* as Complainant's Exhibit, Norton, No. 14, J. A. S., Ex'r., June 29, 1878. These several original papers, being on file in this Court in a pending cause, printed copies from the record of that cause of the same will be furnished and filed and marked as "Complainant's Exhibit" in this cause, as the originals will always be where this Court can inspect the same whenever necessary for this purpose.

2273 Adjourned to Saturday, January 31, 1880, at ten A.M.

NEW YORK, February 6, 1880.  
11 o'clock, A.M.

Present — Counsel as before.

Complainant's counsel offers in evidence, in view of the course pursued by the defendants' counsel with reference to the Patent Office difficulties of M. D. Leggett, Commissioner of Patents, and the witness, Marcus P. Norton, an exhibit on file in this court in the case of *Campbell v. James and Eddy*, marked in that case as "Complainant's Exhibit, beginning Nos. 1 to 17 inclusive, September 2, 1878, I. B., Ex'r.," a printed copy of which is produced for this case, which I desire the examiner to mark "Complainant's Exhibits, No. 1 to No. 17 inclusive, February 6, 1880, J. A. S., Ex'r."

Q. 105. You have spoken of a suit in this court of "*Robertson v. Secombe Manufacturing Company*." State whether, upon the final hearing in that cause, an opinion by the Court in writing by the Court was made and filed in this court, and, if so, by what judge.

A. I understand there was an opinion of that kind prepared in writing, and that it was by Judge Blatchford. It is reported in vol. x. of Blatchford's Reports, p. 489.

Q. 106. State whether in that opinion there was any thing said by Judge Blatchford as to the proceedings in the Patent Office instituted by M. D. Leggett, Commissioner of Patents, against you, and what was said by that judge with reference to yourself personally while considering that Patent Office affair.

A. There was something of that kind mentioned in that opinion. I know of no better way to answer as to what it was than to have the same quoted from that opinion in this answer which is as follows: —

"The principal defence set up in this case, is that the improvements claimed by the plaintiff, in his re-issued patent, were previously invented by one Marcus P. Norton of Troy, N.Y. So far as regards the contents of a caveat filed in the Patent Office by said Norton on the 21st June, 1855, it is sufficient to say

- that the improvements claimed by the plaintiff are not found in that caveat. So far as regards the paper called 'An additional caveat,' and purporting to be dated August 21, 1855, and set up in the answer as having been filed in the Patent Office on the 25th of August, 1855, in and with and as part of the said
- 2278 caveat filed June 21, 1855, it is sufficient to say that after due notice to said Norton, and a trial had before a commission appointed by the Commissioner of Patents, the said paper was, in September, 1871, adjudged by the said commission to be fraudulent, and to have been surreptitiously introduced into the caveat file of said Norton, filed June 21, 1855, and that thereupon the Commissioner of Patents indorsed on said paper a memorandum, signed by him, that said paper does not form a valid portion of said caveat. There remains
- 2279 the evidence as to the prior existence in fact, as completed inventions, made by Norton, of the plaintiff's improvements. As to this, the burden of proof is on the defendants, and they do not establish the fact satisfactorily. Norton's own evidence is, manifestly, not to be relied upon. The circumstances attending the taking of his deposition in this suit, the contradictions in sworn statements he has made at different times regarding the alleged caveat, and the manner in which, as shown by this record, he caused witnesses to testify
- 2280 in *ex parte* depositions, to matters of which they had no recollection, make it impossible to rely on his testimony. But the evidence of Norton, and that of the other witnesses for the defendants, shows nothing done by Norton, prior to the plaintiff's invention, which amounted to more than an unsuccessful experiment."

Q. 107. State whether you were solicitor and of counsel for the defendant in the cause in which that opinion was rendered; and, if so, for about what length of time.

- 2281 A. I was. I prepared the answer in that cause. I attended the examination of the complainant's witnesses, and attended during the putting-in of the testimony in complainant's direct case; and, after that was completed, I was examined as a witness for the de-

defendant in that cause. Within a month or so after my examination as a witness, matters of serious dispute arose between Mr. William W. Secombe, the so-called president of defendant company, which led to, I think, two suits, and it may be three, in the Supreme Court of  
 2282 the State of New York of myself as plaintiff against that defendant and also against Mr. W. W. Secombe personally, which were settled in the early part of July, 1873; and on the tenth day of that month all of the letters-patent that had been assigned to that defendant, or to W. W. Secombe by myself and my assignee, Miss Helen M. Ingalls, were assigned and reconveyed to Miss Ingalls by Mr. Secombe, and by the defendant company.

When those difficulties that I have referred to arose  
 2283 between Mr. Secombe and myself, I was requested by Mr. Secombe to resign my position as solicitor and as counsel in that cause in favor of Mr. Nelson Cross; and I think an order of substitution was entered therein, of the date of which I do not now recollect.

Mr. Cross had the entire management of the defence in that cause after that time. I did not know, until I saw and read the opinion of Judge Blatchford, from which I have quoted in my last answer, that the complainant therein had made a personal attack upon me  
 2284 of the kind I ascertained he did make upon examining the original records in that cause. After having read Judge Blatchford's opinion, to which I have referred, I was much surprised when I first learned of these matters, and felt myself deeply grieved that Mr. Secombe should have allowed them to have proceeded without notice to me, and giving me an opportunity to make a personal defence to them. Had I had the opportunity to have defended them before Judge Blatchford in that cause, and fully explained those matters to him, I do  
 2285 not believe he would ever have written in that opinion that which I have quoted therefrom in one of my answers to-day.

Considering that matter, as I do, an *ex parte* affair in which I took no part and knew nothing of at the time of the final hearing and argument, and not until, as

before stated, I became acquainted with the same by reading Judge Blatchford's opinion as above stated, I know that great injustice was done me in that opinion. Not that I at all blame Judge Blatchford, as he only  
 2286 had before him the complainant's version of that Patent Office matter, which I have never had any doubt about the same being of that kind represented by me in this examination, and which the records of the Patent Office wholly sustain the views I have expressed about it in my opinion. I know that I do not and did not deserve the statements and censure there pronounced; and, in my opinion, had that able and fair-minded judge had before him all the facts and circumstances attending those transactions in the Patent  
 2287 Office, he *never* could and never would have pronounced those words quoted from that opinion, in my opinion; for, since that time and until the present, I have very frequently appeared before him in this court in the hearing of motions and in the hearing of causes, and I desire and ever have desired no kinder consideration at the hands of any Court than I have received at all times on the occasions to which I refer at the hands of Judge Blatchford. I never have for one moment blamed or censured him; but I have and do censure  
 2288 and blame that counsel, whoever he may be, who imposed upon and deceived Judge Blatchford in the presentation of that matter in an *ex parte* way, when I have reason to believe and do believe that he must have known that the whole thing was a gross fraud and a malicious libel coming from a questionable source, although in an official way.

Q. 108. As to the caveat of the 21st June, 1855, and the additional description of the 21st of August, 1855, filed on the 25th August, 1855, and referred to  
 2289 in that part of Judge Blatchford's opinion from which you have made quotations in one of your answers, what, if any thing more, do you desire here to say with reference to them?

A. I recall nothing more that I desire to say specifically about them in this cause; but, as a part answer to this question, I desire here to repeat and to re-affirm

each and every statement that I have made in this examination concerning those papers, that caveat, and the conduct of M. D. Leggett, Commissioner of Patents, and of T. J. W. Robertson with reference to the same.

I will take occasion, however, to say that the "*due notice to said Norton*," and "*trial had*," mentioned by Judge Blatchford in that opinion, were neither *due*, fair, just, or honest; but, on the other hand, most undue, unfair, unjust, and dishonest, as the record of those proceedings themselves will disclose to any fair-minded person. I have gone into details about those things in this examination, and I do not believe that the records themselves vary much from my statements about these

transactions had in the Patent Office, if they vary at all; and I have not yet observed any variance in the examinations I have made, and as related by me on this examination. There is now on file in this court a model, containing the invention described and claimed in the Robertson patent, which was made for me by Cyrus A. Sherwood of the city of Troy, in the winters of the years 1856 and 1857, as will appear by reference to his evidence in the case of Campbell against James and Eddy, and especially so by an examination of complainant's Exhibit, Sherwood, J. H. L., I. B., Ex'r, May 17, 1878, and now an exhibit in this cause under date of December 17, 1879, J. A. S., Ex'r. I now refer to the items on that exhibit under the several dates of January 8, 9, 12, 13, and 14, 1857, which were charges for labor performed by Mr. Sherwood in finishing this identical model which I refer to as being on file in this court in the case of Robertson v. The Secombe Manufacturing Company.

It will be observed that these items were for finishing printing-press stamp, which, according to these charges, must have been commenced in the month of December, 1856. I will say further, there is on file in the case of Campbell v. James, as well as in this cause, certified records from the Patent Office of the application of Marcus P. Norton in connection with a Mr. Haskell, of October, 1857, showing that at that time there was a model, drawings, written descriptions, and

one or more claims of each and every part of the identical invention described in the additional descriptions of the date of August 21, 1855, in the caveat of June 21, 1855, and mentioned by Judge Blatchford in that opinion; and there is other evidence in that cause and in this on the same subject, clearly showing that the contents of those papers of June and August, 1855, were truthful and honest in every respect.

Q. 109. In that opinion some reference is made to *ex parte* depositions. What have you to say with reference to those, if any thing?

A. I have this. Those depositions were taken before United States Court, John T. Lamport, precisely as they would have been taken had they been taken before Judge Blatchford himself. They were taken in the usual way of question and answer, preparatory to the taking of testimony in support of the answer in that cause.

When Mr. Sherwood was subsequently examined before Judge Strait, I was not present, and knew nothing of it at the time. Mr. Sherwood was forced into that examination by a subpoena, knowing that Mr. Secombe was unfriendly to me, as he afterwards told me. He was given no time to refresh his recollections; and, being thus situated, he felt himself unprepared and unwilling to testify to a fact and circumstances without time to re-examine the whole subject-matter; and he testified as best he could under such circumstances, as he subsequently informed me. I do not think that Mr. Sherwood was properly examined by defendants' counsel in that matter, as Mr. Cross was almost entirely unfamiliar with the times, places, and circumstances and subject-matters about which he was trying to examine Sherwood; and it was in some such way as this that Mr. Sherwood either became confused or disgusted, and cut off his answers by saying "I don't recollect," or "I have no recollections."

Inasmuch as defendants' counsel is not now present, and the witness having completed his deposition in this cause, and in order that defendants' counsel may be present when witness signs this deposition, or to fur-



ther inquire of witness if that counsel shall so desire,  
 2298 complainant's counsel moves an adjournment, or recess,  
 until Monday, February, 9th inst., at 12 o'clock M. of  
 that day, for the purposes indicated in this motion;  
 and that in the mean time this examiner be pleased to  
 notify defendants' counsel of this adjournment and  
 recess, and the reasons why it is had.

And examiner is requested also to notify said coun-  
 sel that complainant's counsel is about to close his ex-  
 amination before this examiner in this cause, and  
 adjourns this cause *sine die*.

2299

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NEW YORK, February 9, 1880.  
 12 o'clock M.

Present — Counsel as before.

*Re-cross Examination of*

MARCUS P. NORTON, *Esq.*, by C. W. BETTS, *Esq.*

× Q. 110. You say, in answer to the 108th ques-  
 2300 tion, "There is now on file in this court a model con-  
 taining the invention described and claimed in the  
 Robertson patent, which was made for me by Cyrus A.  
 Sherwood of the city of Troy." When was that  
 model made, and for what purpose?

A. As appears from Mr. Sherwood's account against  
 me on file in this court, in the case of Campbell v.  
 James and Eddy, "Complainant's Exhibit, Sherwood,  
 J. K. L., I. B. Ex'r, May 17, 1878," a printed record  
 of which is now before me, and an exhibit in this  
 2301 cause, it was finished on the 15th January, 1857. It  
 must have been begun in construction by Mr. Sher-  
 wood at least in the month of December, 1856, as he  
 has five entries concerning that model in his general  
 account against me, commencing January 1, 1857;  
 four separate entries previous to the fifteenth day of  
 that month and year, which read, "to three hours,"  
 "to two and one-half hours," "three hours," "two  
 hours," and also "two hours finishing printing-press  
 stamp," as will appear from this statement of account,

2302 which was produced and sworn to by Mr. Sherwood in the case of *Campbell v. James and Eddy*. I make this answer with that record before me, believing it to be perfectly correct on that subject.

I hold in my hand the original affidavit made by Cyrus A. Sherwood on the 5th April, 1872, before A. D. Lyon, a notary public at the city of Troy, which is an original record belonging to the files of this court, having on the back of it, in large blue pencil marks, the following: "5 — 344." This affidavit, when I first  
 2303 saw it previous to to-day, was signed and sworn to by Mr. Sherwood, and attached to the model on the 5th April, 1872; and the last time I saw that model it was attached to it.

To make my answer more specific, I will quote from that affidavit the following: "Deponent says that such original model is hereto attached, and is the identical model made by this deponent in the winter of 1855-56, for Marcus P. Norton, as stated in his deposition above referred to, including such alterations as  
 2304 were made by deponent in the spring of the year 1857, as specified by him in the deposition above referred to.

"The foregoing statements were subscribed and sworn to by this deponent on the 19th March, 1872, before John T. Lamport, a United States commissioner, Troy, N.Y."

"Otherwise the model hereto attached, and each and every part thereof, is the same made by me in the year 1855-56, as above stated, and as stated by me in my former deposition, excepting the detachable chart,  
 2305 which was put in in the spring of 1857, because Mr. Norton desired to print a "way-bill" for post-office use, together with the name of the post-office, to wit, at Troy, N.Y.

It appears from this affidavit by Mr. Sherwood that this model to which I referred in my answer to the question referred to by *your* question, was made in the early part of the year 1856, and completed, as stated by him, in the early part of the year 1857.

I do not make this answer from recollections or  
 2306 memory, but from records in this court on file, which

I believe to be, and, so far as I can, I know to be, correct and truthful.

This model was made for the purpose of experimental uses upon the improvements and invention represented by it. It was subsequently used and filed in the Patent Office at Washington on the 15th October, 1857; and it is very clearly and distinctly shown by the drawings found in "Complainant's Exhibit, Norton, No. 22, December 17, 1879, J. A. S., Ex'r," under the  
 2307 heading of "Norton and Haskins's hand-stamp, filed October 15, 1857," and which drawings are signed "Marcus P. Norton, C. A. Haskins." This model was withdrawn by me from the Patent Office under the rules of practice then prevailing in that department; and I think it was during the term of office of Mr. T. C. Thatcher, Commissioner of Patents, or else in the very first part of Mr. Samuel S. Fisher's term as Commissioner of Patents. The exact time of the withdrawal I do not now recollect.

2308 I said in that answer that that model is now on file in this court. Perhaps it is better that I should say that I believe it to be now on file in this court. I will have it looked up; and if to be found, as I have no doubt it will be, I will produce it on this examination.

*Re-direct.*

Q. 111. Look at two affidavits signed Cyrus A. Sherwood, before A. D. Lyon, notary public, Troy, N.Y., on the 5th April, 1872, and each bearing the same  
 2309 date, and each bearing the official seal of A. D. Lyon, notary public, Troy, N.Y., which I now hand you, and state in whose handwriting those affidavits are, if you know.

A. I think they are in the handwriting of Mr. William H. Poor, a person then residing at the city of Troy. The original drafts were prepared in my handwriting by myself, and submitted by me to Mr. Sherwood on the 3d or 4th day of April in that year, as I now remember. Mr. Sherwood, in examining them,  
 2310 made some changes in each of them; and thereupon it was that they were re-drawn, and by Mr. Poor, who

was helping me to complete the memorandum examination of witnesses, at Troy, about that time, so that I might leave for Washington on the evening of the 5th of that month, as I had been during that time hard pressed by professional work and engagements; and so it was that I called Mr. Poor to my assistance in those matters.

Complainant's counsel here offers in evidence the  
 2311 original affidavit dated the 5th April, 1872, from which witness has to-day made several quotations; and the same is here marked "Complainant's Exhibit, A. D. Lyon, February 9, 1880, J. A. S., Ex'r."

Q. 112. State whether the exhibits known as the affidavits made by Cyrus A. Sherwood; of the date of April 5, 1872, are original papers and belong to the files of this court, if you know.

A. They are. Each of those affidavits has the original signature of Mr. Cyrus A. Sherwood, and they  
 2312 were signed and sworn to by him before A. D. Lyon, a notary public at Troy, in my presence on the day of the date of each.

One of those affidavits is on file in the case of Campbell v. James and Eddy, and is attached to "Complainant's Exhibit, Norton's caveat, dated June 21, 1855," and filed in that cause June 29, 1878. The other is on file in the case of Thomas J. W. Robertson v. the Secombe Manufacturing Company, and it belongs with the model that I have before referred to as containing  
 2313 the invention upon revolving dates in hand printing-press or hand-stamps.

Q. 113. State, if you know, the time when Mr. Knibbs first began to construct the improvements and invention described in the specifications and shown in the drawings, and claimed by the claims of the letters-patent granted to James Knibbs and Marcus P. Norton on the 24th May, 1864, No. 42,920, represented by "Complainant's Exhibit, C, Knibbs, original patent," on which the Bill of Complaint in this suit is founded.

2314 A. April 22, 1860.

Q. 114. State, if you know, when those improvements and invention were first applied by Mr. James

Knibbs to the steam fire-engine "Arba Reade" at the city of Troy, N.Y.

A. April 30, 1860, and for the purpose of an experimental test.

Q. 115. State, if you know, how long thereafter Mr. James Knibbs continued to experiment with that device and invention at the city of Troy.

2315 A. Until the 12th February, 1863. On that day a new and improved device was put upon the steam fire-engine "Arba Reade," and the old one was removed from that engine on that day.

The newly constructed device put upon that engine on that day proved a perfect success of Mr. Knibbs's improvements and invention, upon which the patent in this suit was granted, as before stated; and I believe it is on that engine now.

Q. 116. State, if you know, why it was that Mr. 2316 Knibbs did not apply for the letters-patents named in the bill in this suit at an earlier time than he did make his application to the Commissioner of Patents for that patent.

A. Mr. Knibbs acted entirely in that matter upon my suggestions and advice concerning it; as I was not only expecting to have an interest in that patent, but I was also during the year 1860, and each and every year thereafter to the granting of that patent, Mr. Knibbs's attorney and counsellor. I advised him to first prove 2317 by actual experimental trials whether the invention commenced by him April 22, 1860, was of any value or importance in the construction and operation of steam fire-engines; and inasmuch as the law gave him two full years to make, sell, and use his invention after it had become perfected and completed, and inasmuch as he proposed such radical and important changes in the construction and operation of steam fire-engines, it would be far better for him to take such time as he thought reasonable and necessary to experiment with 2318 that invention on the steam fire-engine "Arba Reade," and thus he could ascertain as to the value and importance of his invention. Mr. Knibbs followed my advice in that matter; and as soon as he and I both

became satisfied that that invention was in a perfected and completed condition, he immediately began the preparation necessary to make a complete application to the Commissioner of Patents for the granting of a patent on that invention.

Q. 117. State, if you know, the time when Mr. 2319 Nehemiah S. Bean of Manchester, N.H., was in Troy, N.Y., in the year 1861, and who was with him, if any one, from Manchester.

A. Mr. Bean was in Troy on the 24th July, 1861; and Mr. E. A. Straw of Manchester, N.H., was with him on that occasion. On the 7th of August in that year, Mr. Bean again visited Troy in reference to the contract and construction of a new steam fire-engine, which afterwards was built by the Amoskeag Manufacturing Company at Manchester, N.H., which engine 2320 arrived at Troy, N.Y., on 14th January, 1862, and was put into service in the fire-department on the 27th January of that year, and is now known, and has ever since been known, by the name of "J. C. Osgood;" and it is the engine referred to by complainant's witnesses, Knibbs and Riley, in their testimony in this cause.

Q. 118. State how it is that you have to-day been enabled to fix the dates as you have done in answer to questions.

A. By reference to the original records of those 2321 events, now before me, which I obtained at Troy, N.Y., and which is in the handwriting of Mr. James Knibbs, and also from my recollections of those events at the times and places where they took place.

MARCUS P. NORTON.

Sworn to before me this February 9, 1880.

JOHN A. SHIELDS,  
*Examiner, &c.*

2322 Complainant's counsel inquires of defendants' counsel where he obtained, and of whom, the printed "Defendants' Exhibit, Norton, December 15, 1879, J. A. S., Ex'r.," signed "M. D. Leggett, Commissioner of Patents," offered by him during the cross-examination of the witness Norton.

Defendants' counsel states that when complainant's counsel put himself on the stand as a witness, defendants' counsel, then remembering that the charges had been brought against defendants' counsel, and a finding obtained, such as is specified in that exhibit, there-  
 2323 upon looked among the papers in the case of Robertson v. Secombe in his office, for some record of these proceedings, in order that he might thereby impeach the testimony of this witness, and that he found there this printed paper. He does not remember who sent it, nor when it was received, nor by whom it was printed.

Complainant's counsel inquires of defendants' counsel, Mr. Betts, now present, where, of whom, and when  
 2324 he obtained "Defendants' Exhibit, certified copy, Norton, January 27, 1880," J. A. S., Ex'r., and for what purpose he obtained it, and why it was put into this cause.

Defendants' counsel states that when the printed paper, defendants' Exhibit, Norton, was offered, and the witness Norton was asked whether he was the Norton therein named, he replied that it was false and fraudulent, or words to that effect; and that defendants' counsel therefore obtained a certified copy from the  
 2325 Patent Office in order to show that such proceedings had been had, and that he obtained it about the date which it bears.

Complainant's counsel desires to know of defendants' counsel, now present, upon which of these two exhibits he relies for evidence upon the points raised by him in the producing of them in this cause. This inquiry is made because the papers themselves do not agree, in that there is a discrepancy and wide difference as to the matter set out in each, or, in other words,  
 2326 one contains much more matter than the other, as will appear by a comparison.

Defendants' counsel states that he expects to refer to both.

Complainant's counsel here gives notice to the defendants that he has closed his rebuttal evidence in this cause, and asks the defendants' counsel if he desires to take any further testimony in this cause.

NEW YORK, December 17, 1879.  
10.30 o'clock A.M.

2327 Met pursuant to adjournment.

Present — Counsel as before.

Samuel P. Kittle, Esq., a witness produced on the part of the complainant, deposes and says: —

Q. 1. Have you been sworn and examined heretofore in this cause as a witness on the part of the complainant?

A. I have.

Q. 2. State, if you please, whether before that examination, and since then, you had occasion to examine, and did examine, complainant's patent, marked "Exhibit C," and now in evidence in this cause.

A. I did examine exhibit referred to before giving testimony, and have since. It is a certified copy of the Knibbs patent in suit.

Q. 3. State whether, from the examinations you have made of that patent at different times, you have been able to correctly understand the improvements or invention therein described, and claimed by Mr. Knibbs to be his invention.

Objected to as the witness has already been fully examined on this point.

A. I think so: I have.

Q. 4. In this connection, and preliminary to your examination in rebuttal of defendants' proofs, I desire you to state your views as to the invention or improvements that are described and claimed in that patent; and, to enable you to do so, I now hand you complainant's Exhibit, C, filed in this cause as evidence on the 25th September, 1878, before John A. Shields, one of the examiners of this court; and I desire you to go into that matter as fully as you may deem best, in order to give a full answer to my inquiry.

The same objection.

A. In answer to this question, I refer you to my previous answers given in this cause to the third direct interrogatory, to the tenth and to the twenty-first, and



- will add that the invention set out in the patent, complainant's Exhibit, C, is an improvement upon the main
- 2331 water-pump of a steam fire-engine, to put more perfectly under the control of the engineer the pressure upon the discharging part of a piston-pump without waste or loss, having a receiving and discharging chamber, with air-chamber or chambers by which the suction and discharge power is subject to an elastic force. That the said pump is provided with branches; to wit, one or more on the suction side of such a pump, and discharging branches, one, two, three, four, or more, for coupling-hose on the pressure or discharge side of
- 2332 such a pump, for connecting the leading and discharging hose for the purpose of spurting water to put out fire. I say piston-pump, because that is the kind of pump illustrated and described, and to which the invention, as set out in the patent, complainant's Exhibit, C, is clearly meant to be applied, and is applied to such a pump, because of certain specified defects and deficiencies, faults and damages, which had occurred, and which are plainly stated and shown to have existed in fire steam-engines employing that kind of a
- 2333 pump, which the invention and contrivance specified, illustrated, described, and claimed, is to remedy and save.

Adjourned by consent of counsel to 10.30 o'clock, A.M., of Thursday, December 18, 1879.

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NEW YORK, December 18, 1879.  
10.30 o'clock, A.M.

- 2334 Met pursuant to adjournment.

Present — Counsel as before.

Samuel P. Kittle, Esq., continues his answer to Q. 4. Such a pump being connected with engine-power, and coupled to hose for receiving and discharging water in several streams on the fire, the engine to which the pump is connected being powerful, and the pump being so connected thereto as to be operated with great

rapidity in its stroke, the amount of water draughted  
 2335 and discharged by the pump would of course be very  
 large.

The discharge, of course, must be equal to the draught,  
 else the pump in its connections or construction, or the  
 hose opening into the discharge side, would be greatly  
 strained, if not bursted or destroyed, in case one-half of  
 the discharge, more or less, were shut off at the nozzles  
 when the water was being played on the fire, unless  
 there should be a waste valve to discharge the water  
 into the street or on the ground, ready and convenient  
 2336 of operation for the engineer.

But supposing the hose and the pump and its con-  
 nections of such strength and capacity as to withstand  
 any strain, that under even extraordinary circumstances  
 should be put upon the parts, then it can but be seen  
 that the strain of this excessive pressure would be trans-  
 mitted back to the driving power, and through it to the  
 steam or other power driving the intermediate engine.  
 And unless the engine or the pump should give way,  
 the steam-boiler or other power would suffer the strain  
 2337 eventually. Therefore I think it can but be seen that  
 there was a necessity, in the rapid operation and hur-  
 ried strokes of this pump, for the purpose of throwing  
 vast quantities of water to prevent a great loss by fire,  
 for some mechanical provision in the control of the  
 engineer, whereby the excessive pressure in the force  
 side of this pump might be readily and quickly relieved  
 by wasting or discharging water from that side of the  
 pump in case part of the streams playing on fires should  
 be shut off; for in the examination of the kind of  
 2338 pump to which inventor Knibbs applied his invention  
 and improvement, it will be seen that the draughting  
 and discharging operation, and stroke of the piston,  
 when connected with a sufficient water-supply, proceeds  
 in a positive manner, and with very little possible leak-  
 age or loss by valve action.

Now, it must be apparent to any one that the reliefs  
 from excessive strain on the force side of this pump  
 would be required to be equal to the difference of the  
 draught and the discharge on the fire, for which the

2339 pump is constructed to throw water through its various lines of hose, and the hose nozzles, and would be subject to many variations; and were there no means of relief but through the hose, then the water would be wasted through the end of the hose or the nozzles on the street when not thrown on the fire, and such a waste in many cases might be of great loss. It also might be attended by bad or damaging results, which would be indeed almost sure to follow, in the winter time freezing, in the summer time flooding, the street or  
 2340 cellars, and damaging property thereby; but suppose the water, not being played on the fire by one, two, or more lines of hose, is shut off at the gates on the pressure side of the pump back of the hose-coupling thereto, and suppose that a waste-gate is provided with regulating valve convenient of operation by the engineer, the water sufficient for the necessary relief would then be discharged, and wasted the same as before supposed, only at a different location.

Now, the invention of Mr. Knibbs, as set out, illustrated, described, and claimed in complainant's Exhibit, C, is upon the pump described, operated under the conditions suggested for the purpose of preventing the strain or breakage, the hose bursting, or the waste of water, or the damage attending such waste, which would be liable to occur in the operation of the pump by such a power as the steam fire-engine.

And also in the case of the employment of such an engine as the steam fire-engine, when the same took its water-supply from the force side of the pump, and conducted into the boiler by the ordinary supply-pump, by valves opening into or against steam-pressure, the boiler would be liable to be flooded.

The inventor Knibbs claimed, as I read and understand the specification in complainant's patent, Exhibit C, to have successfully provided mechanical devices when used in combination with such a pump under such conditions as I have stated above, to prevent the various waste, breakage, strain, and flooding; and the mechanical means or devices, when combined with such  
 2343 a pump, consist of a waterway, tube, or conduit, open-

ing into the pressure and suction side of such a pump, which waterway, tube, or conduit, is provided with a valve capable of opening or closing said waterway to any desired degree sufficient to pass water equal to the difference between the draughting of the pump and the required discharge through the hose or pipes, be the same more or less; and, further, that he has provided that valve with means for ready and convenient operation in opening and closing the same for the engineer  
 2344 operating the pump and engine which drives the same.

The above I conceive to be the invention set out or described and claimed in the patent, complainant's Exhibit C, and the same is divided in two parts; to wit, the first and second claim,—the first being the operation, the second being the combination of the mechanical devices employed.

Q. 5. Then, if I understand you correctly in the answer you have just given, you find the improvements and the invention described and claimed in the Knibbs  
 2345 patent in suit represented by complainant's Exhibit, C, in its construction, parts, arrangement of parts, and combination of devices, to consist substantially and materially of a piston or plunger main water-pump chamber, having immediately upon one side of it a suction or water supply chamber, and on the opposite side thereof a force or water discharging chamber connected to the said suction or supply chamber by means of a tube, conduit, valve-opening, or water passageway, having arranged and combined therewith a regulating  
 2346 valve so constructed as to be readily operated by the engineer to open or close this communication between the two chambers surrounding this piston or plunger chamber, or to be opened from and closed upon a valve-seat constructed in such water passageway for the purposes of allowing the water under excessive pressure in the discharging hose or force-chamber to be returned back and into the suction or supplying chamber in such quantities as to give to such discharging hose, to the force-chamber, and to other parts of a steam fire-engine,  
 2347 the desired or necessary relief from excessive water-pressure, and thereby to preserve all those devices, or

parts, affected by this excessive water-pressure, in a safe and sound condition, so that each may continue to perform the services or functions designed for each, and which each perform during the operation of a steam fire-engine drawing and throwing or spurting water on a fire.

Q. 5½. Am I substantially correct in this my understanding of your last answer? I am now referring  
 2348 more particularly to the construction, to the parts, or devices, and their several arrangements, and their several combinations in the making-up of a main water force-pump, such as called for by the specifications and drawings, and claims of the Knibbs patent in suit complainant's Exhibit, C.

Objected to as leading.

A. I think so. I think the restrictions or limitations to the last question are fully met in my last previous answer, when taken in connection with references  
 2349 given in previous answers by me in this cause. The inventor Knibbs, in the patent, complainant's Exhibit C, illustrates and describes in his specifications, drawings, and model, a suction and force pump having a piston-well, or cylinder, connected by two opposite partitions in a line vertically or longitudinally across its axis with an outer shell, or cylinder. And the space between that outer shell, or cylinder, and the inner piston-well, or cylinder, constitute the suction and discharge chambers, the same being separated by the par-  
 2350 titions before referred to.

I mean these same chambers constitute the main or principal portion of the pressure or discharge chambers of that pump, and that there can be no question about that kind of pump being the pump to which the improvements mentioned in the question could and were applicable.

Answer objected to as not the answer of the witness, but of the complainant's counsel.

Q. 6. I desire you state very distinctly and with  
 2351 considerable particularity as to the kind of a main water-pump that the specifications and drawings and claims of the Knibbs patent in suit, complainant's Ex-

hibit, C, call for in and by those descriptions and illustrations.

That is, whether it is a piston or plunger pump, or a rotary-valve pump, or any other kind of a rotary-pump. In fact, the real question is, "What is it?" and give your reasons for any statement you make with reference to the subject-matter of this inquiry, and give  
 2352 them as full and as free as you may, in your judgment, think best.

A. The pump, as I have before stated, to which Knibbs applied his improvements; to wit, a relief pipe and valve, or waterway and valve, was the piston-suction and force-pump, having the suction-chamber and discharge-chamber with branches, as I have before described, and the air-chambers referred to by me, or a reciprocating piston or plunger pump.

Without reference to the model, but with reference  
 2353 to the drawings and the language of the written specification, I will quote from the printed record of this case from the patent as spread upon that record, to show the Court the reason for the opinion I have above expressed, and also that the inventor never contemplated any other kind of pump. I mean any rotary or ordinary lift-pump, or any other kind but a piston or plunger pump of the character I have repeatedly described in my previous answers. I quote from the 27th page of the printed record, No. 97 folio: "Be it  
 2354 known that I, James Knibbs of the city of Troy, county of Rensselaer, State of New York, have invented new and useful improvements in pumps for steam, fire, and other engine-pumps; and I also hereby declare that the following is a full, clear, and exact description thereof, reference being hereby had to the accompanying drawings and letters of reference marked thereon, which said drawings make a part of this specification." And on the same page, 98th folio, a description of the first figure, — "Fig. 1 is a front view of  
 2355 *the pump*." On the same page, 99th folio, the two last lines on the page, "By means of which the force and discharge part of *said pump* is connected to or with the suction or supply part of *said pump*. The

last part of the above quotation being from the 4th line on 28th page, I continue my quotation on 28th page: "So that one, two, three, or more, discharge pipes or hose may throw streams of water at the same time *and stroke of the piston, or operation of said pump,* without any waste of water, by the opening of the  
 2356 valve or discharge pipe to enable *the pump* to work successfully and without injury in throwing of streams of water on fires, &c.

"Heretofore, in *steam fire-engine pumps* constructed for the purpose of throwing *two, three, four, or more,* streams of water *at one and the same stroke of the piston,* there has been a great difficulty attending the particular and successful *working of the same* whenever it has been desirable to throw one, or two, or perhaps three, streams of water, when *the pump* is constructed to throw four or more streams of water." I  
 2357 further quote from the 28th page, folio 102: "The operation of *the pump* so as to make the discharge-water." The 3d line of the same folio: "The supply or suction part of *the pump*"; and from the 5th line, the same folio: "*The pump* would become somewhat strained." Then from the last paragraph on the 28th page: "The force part or section of the *said pump* being connected to or with the suction or supply part, &c." Also from 29th page, 104th folio, 3d line: "One  
 2358 or two streams of water at one *stroke or operation of the piston.*" Also the last two words of the 5th line: "*The pump,*" and commencing at the last two lines of the said paragraph, "*The said pump,*" and the 3d line of the 105th folio, "*The said pump,*" and the 4th line of the said folio, "*The pump,*" and the 7th line of the said folio, "*The said pump,*" next the last line of the said folio "*The said pump.*" In the description of the figures, commencing at the last paragraph of the 29th page of the printed record, the inventor particularly describes what pump is described by the above  
 2359 references. I quote: "A is *the pump* cylinder; A' is the lower cylinder head; A'' is the upper cylinder-head." I don't suppose any one will pretend that this is a rotary-pump, or any other kind of pump than that

I have stated, to which Knibbs's invention and improvements are applied. From the same page and paragraph, the 3d line of 107th folio, "*The pump and engine with water.*" The 5th line from the bottom of the page I quote: "D is a tube connecting the force or discharge section of *said pump* to the vertical valve tube E." I further quote from the 30th page, commencing at the first line: "G, G is a tube, or pipe, connecting the force or discharge part, or section, to or with the suction or supply part, or section, *of the said pump.*" I refer also to the reference to the *steam, fire, or other engine-pump* mentioned in the first claim, and say that that pump is the same pump illustrated and described in the specifications, and referred to by me. The same is true in regard to the pump referred to in the second claim. "The steam, fire, or other engine-pump," which, unquestionably, is a piston or plunger pump, having the branches, air-chambers, pressure, and force chambers, and provided with the necessary construction for coupling or connecting suction and discharge hose for forcing or ejecting or spurting water for the extinguishment of fires.

All the italicising not appearing in the printed record from the quotation is my own, for the purpose of calling the Court's attention to the kind of pump described and in part illustrated in the drawings.

Q. 7. Defendants' counsel, under pretext of making an objection to your answer to direct Q. 5 of this examination, made the following statement: to wit, "As not the answer of the witness, but of the complainant's counsel."

This so-called objection was made and entered by defendants' counsel after direct Q. 6 had been put to you, and was spread upon this record by the examiner. Desiring that this Court may fully understand whether that statement so made by defendants' counsel is true, or absolutely false, in every particular contained in it, please state whether that answer to that question was your own answer, founded upon the knowledge and information which you have with reference to the subject-matter of the inquiry to which you were called



upon for an answer unaided by myself, and without instructions or a single suggestion on my part, or whether you made it under instructions or directions on my part.

2364 Objected to as leading.

A. I had no instructions from complainant's counsel; and if any part of the question were suggestive in any manner, it did not influence me in my answer in regard to the truth or manner of my giving that answer, any farther than to call for my opinion, as therein expressed.

Q. 8. Then the statement made by defendants' counsel under cover of an objection, is not the truth? Is it, in point of fact?

2365 Objected to as leading.

A. I should say not.

Q. 9. In your judgment, and from your knowledge concerning the specifications and claims of the Knibbs patent in suit, complainant's Exhibit, C, what kind of a pump is represented at and by Fig. 1, attached to that patent which I now hand you?

Objected to as immaterial, as the patent clearly sets forth that the device claimed in it is for use upon a "steam fire-engine, and other engine-pumps, no restriction being made as to the kind of pumps intended."

2366

A. It is a suction and force pump, having a vertical plunger and piston, and provided with the requisite air-chambers, suction and force chambers, valve-chambers, and branches for connecting the suction-hose and discharge-hose, and provided with a conduit, or water passageway, having a valve-stem and hand-wheel attached thereto for the engineer to control the raising or lowering the valve in that water passageway, to relieve any excessive pressure in the force-chamber, by allowing the return of water from the force to the suction chamber of the pump.

2367

Q. 10. State whether Figs. 2 and 3 of those same drawings represent the suction or supply chamber with an air-chamber combined with it, and the force or discharging chamber of the main water suction and force pump, not only briefly and clearly stated in

your last answer, but in all your answers on that subject during your examination in this cause.

2368 A. Fig. 3 has the vacuum or air chamber marked B', and is mounted upon the suction branch of the suction-chamber, outside and rising vertically above the spindle and hand-wheel, which are for controlling the valve in the waterway G, connecting with the force side of the pump.

Fig. 2 represents the opposite side of the pump; to wit, the force side or chamber, having a branch D running from the pressure or force chamber into the vertical water-gate and passageway E, to the bottom of which the conduit or waterway G is connected, and 2369 outside of which extends the branch for coupling hose thereon. The air-pressure chamber for the force side of the pump is not represented in this figure, but is shown broken off on the same side of the pump, and back of, and at nearly right angles with, the branch D, E, F, before referred to, and is marked in Fig. 1 A'''.

Q. 11. State whether the valve referred to by you in your last answer is, or is not, a regulating valve so constructed, arranged, and combined and operated, as to control the passage of water under excessive pressure in its passage from the force or discharging chamber back and into the suction or supply chamber, each 2370 being represented as you have stated as Figs. 2 and 3, of the drawings of the patent referred to in the last question, and each representing those parts of the suction and force piston or plunger pump for a steam fire-engine, which you have described as being substantially represented as Fig. 1 of these drawings.

Objected to as leading.

A. The figures represent the parts of the pump referred to in the question, and which are quite clearly 2371 shown in Fig. 1. The valve in Fig. 2 and Fig. 3, which controls the flow of water from the pressure to the suction chamber of that pump, is not shown in either of these two figures; but in Fig. 3 the hand-wheel and spindle, and packing-box around the spindle, are shown rising above the suction branch B; and the valve which is attached to the lower end of that spin-

2372 dle is closed upon the end of the pipe G, or raised off from it by interlocking threads of screw on the spindle and the thread surrounding the spindle, and is operated by the hand-wheel which is shown between the pump proper and the vacuum-chamber B', which is mounted upon the branch B.

In Fig. 2 the branch D and water-gate cylinder E and hose branch F and cap *f* are shown, as well as the connecting pipe, waterway, or conduit G, which in those figures is shown broken off. In Fig. 2 *e* represents the handle to operate the water-gate by which the water is turned on or shut off from the discharge or pipe F, where the hose is coupled to the force side of the pump. The water passageway G and the valve H, having the spindle and hand-wheel, are combined together with the pump, and capable of operation by the engineer, or other person in charge, in such a manner as to control and regulate the return flow of excessive water to relieve the pressure-chamber from undue strain therein, or upon the connecting parts of the pump, the engine driving the pump, or the hose connected thereto or leading to the fire which the pump is  
2373 employed to extinguish.  
2374

Q. 12. You have not answered the first part of my question, which is this: Whether the valve, which you have stated is shown in Fig. 1 and also in Fig. 3 of the drawings of the patent referred to in my last questions, is, or is not, a regulating valve standing between the two chambers; namely, suction or supply chamber, and the force or discharge chamber of the main water piston-pump shown as Fig. 1 of these drawings, and so arranged and combined *between* those two chambers  
2375 as to do, when operated, substantially that which is stated in my last question.

Now, the only thing to answer here is whether that is a regulating valve under the conditions and for the purposes stated.

Objected to as leading.

A. It is: and, furthermore, I will state in its location and operation the valve becomes a part of the partition separating the suction and force part of this pump where it rests, or is forced down on its seat.

2376 Q. 13. In this connection I desire you to take the patent about which you have been examined, and state what title of invention you find, if any, upon the drawings about which you have last above made answer.

Objected to as immaterial.

A. I quote, "J. Knibbs, Fire-Engine, No. 42,920. Patented May 24, 1864."

2377 Q. 14. In the first paragraph of the specifications of these letters-patent, as well as in the claims of invention in the same patent, I observe the following words: to wit, a "*Steam Fire or other Engine Pump*;" but in the first paragraph to which I allude, it is stated thus: "*New and useful improvements in Pumps for Steam Fire and other Engine Pumps.*"

Now please state, and found your statement upon the specifications and drawings of this patent, what, in your opinion, is meant by the inventor in his use of the words "or other engine-pumps," or by the words "and other engine-pumps." In your answer, you may state  
2378 as fully as you deem best in order to convey your views on that subject.

Objected to as a mechanical expert is not required to explain such clear language.

A. I think there is no difficulty in understanding what is meant in either of the three cases referred to in connection with the description. The invention applies to a given kind of pump, and is for a given purpose, and operates in a given manner, and produces a given result in its operation when used in combination with that pump. *The improvement, as I understand it, is upon the pump*, and not upon the power driving the pump; and the reference on the first paragraph of the written description of the patent, complainant's Exhibit, C, possibly might be made clearer if it should read as follows: —

2380 Having invented new and useful improvements in pumps, such as are driven by steam fire-engines, or other like engines where great power and rapid strokes of the piston are required and necessary for drawing and throwing large amounts of water upon fires for

their extinguishment; and then in the first and second claims, where the inventor uses the phraseology, steam fire or other engine pumps, I understand as though he had said, my pump is to be used with steam fire-engines, or other engines like steam fire-engines having great power, and which impart quick action or stroke to the piston of my pump; or, if you please, my improved pump is adapted to be driven by such a power as a steam fire-engine on wheels; but it may be used in fac-  
 2381 tories or on ship-board where a like engine or power may be applied to it, and where the same necessities for the improvements should exist when and where my pump is used to put out fires. I keep in mind continually, in looking at this invention, the character of pump to which the improvements are applied, for what the improvement is made, how it is combined and operated in connection with that pump, and what the advantageous results that are accomplished by the combination and operation of the parts, what the pump of the  
 2382 kind specified is for, as well as its construction in its various parts, and what the adaptation of the improvement, and what the harmony of its working, and the usefulness or advantage of the results obtained, rather than to the kind of engine which drives it.

Q. 15. Please to state whether, in your opinion, the invention or improvements which you have very clearly described and defined as being contained in the specifications, drawings, and claims of the Knibbs patent in suit, complainant's Exhibit, C, would be adaptable or  
 2383 required, or could be successfully applied to a pump, ordinarily used for drawing water from a cistern or from a spring or from a well, for family or household use, or whether it could be applied successfully or for any purpose whatever to the pump of an air-gun, or to a pump for exhausting air from cylindrical bodies, or to pumps that are usually worn by counsel conducting patent causes; and, to answer this question, I desire you again to keep in mind the specifications and drawings and claims to which I refer in this question.

2384 A. I think not.

Q. 16. This improvement and invention which you

have pointed out in detail and with considerable minuteness and care, must, in your opinion, be applied to the main water piston-pump of a steam fire-engine, having a suction-pipe to supply that pump with water, and outlets or discharging pipes for throwing or spouting water upon a fire, must it not? This question seems somewhat leading; but I put it in this form for the purpose of ascertaining whether my understanding of  
 2385 your whole evidence in this particular subject is, or is not, correct?

A. Yes, if you term the engine that drives it a steam fire-engine. I have striven to make myself understood; it being my view that the character of the pump will not be changed, nor the improvements upon that pump by the engine employed to drive the same. The pump is for putting out fires; and the improvements are to regulate the excessive pressure which would be occasioned in the force side of such a pump  
 2386 by shutting off one or more of the streams of water being thrown on to a fire. The engine driving this pump for the purpose of draughting and spouting water for extinguishing a fire, the power and speed like the well-known steam fire-engine may, or may not, be termed a steam fire-engine: it makes no difference what you term the power of driving the pump, whether steam fire-engine, or water-wheel power, or any other engine-power. I would even include horse and hand  
 2387 power if necessary, so long as the pump is driven with great power and great rapidity, so as to draught great quantities of water, and throw and spurt them for the extinguishment of fire. The purpose of the pump, and the purpose of the improvements in the pump, remaining the same, conditions under which the pump and the improvements are operated, the manner of the operation of the combined mechanism, and the results remaining the same, the thing must be the same, in my opinion.

Q. 17. During the delivery of your evidence to-day,  
 2388 I have been thoroughly impressed with an important feature contained in this invention; and I propose to submit to you a question on that subject, and it is this:

namely, whether high pressure and rapidity of speed of the piston and its connections of a main water suction and force pump used on a steam fire-engine to draw and throw or spurt water upon a fire are, or are not, important adjuncts in obtaining or getting a large or sufficient quantity of water for the extinguishment of such fire. I desire your opinion on this subject, founded  
 2389 upon your knowledge of steam fire-engines for the extinguishment of fires, whether that knowledge is obtained from the patent in suit, or from other sources at your command.

A. It is.

Adjourned until 10.30 o'clock A.M. of Friday, December 19, 1879.

2390

NEW YORK, December 19, 1879.  
 10.30 o'clock, A.M.

Present—Hon. Marcus P. Norton of counsel for complainant; and C. W. Betts, Esq., of counsel for defendants.

Samuel P. Kettle, Esq., continues as follows:—

Q. 18. At the time you made answer last evening to the last question "It is," you stated that you had a severe headache at the time, and desired an adjournment; to which I assented on condition that you should  
 2391 be allowed to complete your answer, which you stated you were unable, in consequence of the lateness of the hour and your illness, to complete at that time, the same as though no adjournment had been consented to. The examiner, so understanding it, made no entry upon the record as to the adjournment, excepting such as he made; leaving what was supposed at the time to be sufficient space for the reception of the further answer you intimated you would make in the morning. At the time appointed by the adjournment, defendants'  
 2392 counsel was not present, and did not appear until you had not only filled the space above the entry of the adjournment, but also several lines on another page. The defendants' counsel at that point appeared before

the examiner, and, for some purpose better known to himself than to me perhaps, insisted that the adjournment that had been made by the examiner on the record should be removed therefrom, and entered at a point immediately following the words "It is," contained in your answer. Under these circumstances, and  
 2393 recognizing the great importance of his request as touching the merits involved in this cause, I now give you the opportunity, in answer to this question, to continue and complete your answer to the last question if you so desire, which, for that purpose, is now and here repeated.

Defendants' counsel states that he insisted that the record should appear as it was taken, and that he would not submit to have explanations written about the note adjournment as though they had been made  
 2394 before it occurred.

A. It occurred to me, when giving the first part of my answer last night, that Knibbs's fire-engine main water force-pump might possibly be so modified in construction as to admit of a comparatively slow stroke of the piston or plunger, a like motion of the engine driving the same, and yet work successfully in draughting quantities of water sufficient, and discharging the same on a fire in several streams, and yet such change or modification not amount to a material alteration of  
 2395 construction, or the conditions under which the same was operated. To what extent these modifications might be carried, and the pump still operate successfully for the purpose intended, I am not now prepared to state.

However, I have no question of the successful operation of the same purposes intended under the conditions specified in the patent referred to as heretofore by me; and it is unquestionably of importance, and very desirable, if not absolutely essential, in the construction set out in the patent, complainant's Exhibit,  
 2396 C, that the strokes of the piston of the main pump should be driven with great power and rapidity for the most perfect and advantageous results in the extinguishment of fire.



Q. 19. Look at sheet 185 of the record which I now hand you, and state how many lines were left by the examiner last evening at your request to enable you to complete what you then believed would be your further answer to that question.

2397 A. About eight.

Q. 20. Since the adjournment last night, have you had one word of conversation with the complainant's counsel now present, about the subject-matter of that question, or as to the character of your answer to it previous to your commencing to answer in the presence of the examiner this morning?

A. I had not.

Q. 21. I understand that you have substantially stated, during your first direct examination in this  
2398 cause, that you had, at different times, examined the specifications, drawings, and claims of the invention contained in the letters-patent in suit, and of that patent itself, represented by complainant's Exhibit, C. Now, if I am correct in this, I desire you to give your opinion, as a practical mechanical expert, whether the improvements and invention of Mr. James Knibbs, which you have, on this present examination, stated to be contained in that patent, is, or is not, so clearly defined and described in it as to enable a mechanic of  
2399 ordinary intelligence and skill in the manufacture of main water-suction and force pumps for use under steam-power, as stated in that patent, to construct the same, and to arrange and to combine the several parts thereof, as that the whole invention might be put into practical and successful operation in the extinguishment of fires substantially as specified therein, either by the employment of steam-power, water-power, horse-power, hand power, or by any other suitable power; and, if not, state why not, and give your reasons there-  
2400 for, so that the Court may see and know the same.

A. I have not any doubt about it. The specification is full and clear, the drawing sufficient to enable a steam-pump or fire-engine builder to construct and put in successful practice the invention set out in the patent, complainant's Exhibit, C.

Q. 22. Having, in and by your several answers last above given with reference to the improvements and the invention set forth and described in the specifications, drawings, and in the claims of the James Knibbs patent in suit, represented by complainant's Exhibit, C, with particularity and clearness pointed out and described the several parts thereof, and of their construction, and of their arrangement, and of their combinations one with the other in connection with a main water-piston, or plunger-suction and force-pump of a steam fire-engine for the extinguishment of fires. In this connection I desire that you state whether the steam fire-engine belonging to the city of New York, and in use in its fire-department, and which you substantially stated during your examination in complainant's *prima facie*, or direct case, you had on several occasions thoroughly examined, and that you understood the same, contain, in your opinion, the improvements and the invention set out and described in the specifications, drawings, and claims of the James Knibbs patent in suit, complainant's Exhibit, C; and you may, if you wish, give such reasons as you deem best to give to sustain the opinion or views you may give in answer to the subject-matter of this question; and you may give the same as fully as your judgment shall direct you while making your answer thereto.

A. The various steam fire-engines belonging to the city of New York, and operated by the fire-department thereof which I have named or mentioned as having examined in my previous testimony in this cause, and which I understand to be just like all the steam fire-engines belonging to the city of New York, as regards their main water suction and force pumps, and operated by its fire-department, had the improvement mentioned in the question; to wit, the invention set out or described and claimed in the patent, complainant's Exhibit, C, the patent in controversy in this case. My recollections are that there were several of the steam fire-engines; to wit, two or three which I examined considerably over a year ago, which had the waterway with valve controlling the flow of water through it

from the force to the suction side thereof, located outside, nearly identical with that shown in the drawings of the patent, complainant's Exhibit, C; but the greater  
 2405 number (I do not remember now how many) I examined had a water passageway, and the valve regulating the flow of water from the pressure to the suction side of the main water-pump located as shown in the model, complainant's Exhibit, M, which, as I have before stated, is only a mechanical modification, or a modification of construction, or colorable change of that described and illustrated in the patent, complainant's Exhibit, C.

For a more complete answer to this question, I refer  
 2406 to the previous questions and my answers thereto, bearing on this point; to wit, particularly, Q. 21 and answer, and Q. 22 and answer, and Q. 42 and answer.

Q. 23. Look at complainant's Exhibit, M, filed in this cause on the 25th October, 1878, before the present examiner, which I now hand you, and state whether you find the devices there shown to be substantially described in the complainant's patent in suit, represented by his Exhibit, C; and, if you shall answer yea, state whether you do, or do not, consider that model exhibit  
 2407 a modification of the invention made and patented by Mr. James Knibbs, by patent specified in this question.

A. I do. The model, complainant's Exhibit, M, is made to represent the piston cylinder, or well, and the outer shell, or main force and suction chambers, with the suction-pipe and air-pressure chamber, with pipes for connecting hose, the same being at right angles therewith, and also the suction branch for connecting the suction-hose therewith, the valve-plates and valve-chambers and heads of the main suction and force  
 2408 plunger-pump of a steam fire-engine being left off, and the model has a waterway, or passage, leading from the force to the suction side; the same is located in the partition that forms the wall between the force and the suction side, or the force and suction chambers of the main water-pump, such as are used in the steam fire-engines owned by the city of New York, and operated by the fire-department thereof.

The waterway described by me as found by me in the model M, has a valve-seat at one end, and a valve  
 2409 located over it, and operated by interlocking threads on the spindle and around the same, which spindle is connected to the valve, and upon the outer end of which spindle is a hand-wheel for the operation of the valve for the purpose of raising the same from the valve-seat at the end of the water passageway, or for closing the same thereupon for the purpose of regulating the passage or flow of water under excessive pressure out of the force side of the pump into the suction side thereof, in such quantity as shall relieve excessive  
 2410 water-pressure on the force side of the pump, at the discretion of the engineer or operator. For my more complete answer to this question, I refer to my answer to Qs. 10 and 21 of my first direct examination.

Q. 24. State whether you were present during the time of the direct and cross examinations of Mr. J. Boyd Elliot, by defendants' counsel, as an expert witness for and on the part and in behalf of defendants in this suit.

A. I was most of the time.

2411 Q. 25. Did you hear, or have you read or heard read, the so-called testimony rendered by him during that examination, upon or concerning the Knibbs patent in suit, represented by complainant's Exhibit, C, as to what he thought was contained, or was not contained, in the specifications, drawings, and claims, of those letters-patent, dated the 24th May, 1864, and numbered 42,920?

A. I heard it delivered by him. I heard the questions and answers put by the examiner and read to  
 2412 him, and read most of the testimony after, particularly all that which was given in my absence.

Q. 26. Having in my own mind no question of doubt as to the thoroughness of your examination of the subject-matter contained in the specifications, drawings, and claims, of the patent stated, by date and number, in the last question, and believing, as I do, that you have a clear and perfect knowledge and understanding thereof, I desire to obtain your opinion as to

whether those letters-patent contain, or do not contain,  
 2413 that which defendants' expert witness Mr. Elliot, so  
 frequently during his examination as a witness in this  
 cause, denominated "verbiage." I desire you to state  
 about that matter as fully and with as much particu-  
 larity as you may deem to be best, in order to a clear  
 understanding of the same. Elliot substantially testi-  
 fied that those specifications, drawings, and claims,  
 were nothing but "verbiage." What do you say about  
 them?

A. I first read this specification about two years  
 2414 ago, and have read and examined it closely and care-  
 fully, repeatedly since that time. My first impression,  
 I remember, was, that it was a very full, clear, and  
 proper specification, setting out the state of the art  
 and the purpose of the invention, as well as the com-  
 bination of the parts, the operation of the same, and  
 the advantage secured by such combinations and opera-  
 tion; and the more I have examined the patent in  
 issue, and reflected upon the manner of the descrip-  
 tion, the more I have been convinced that it was a very  
 2415 proper, full, and correct specification and claim of the  
 improvements and invention made by the patentee; and  
 my own conviction at the present time is, that the part  
 specially described as "verbiage" by the witness  
 Elliot, is a very proper and important part of the speci-  
 fication as delineating the state of the art; to wit,  
 the necessity for the improvement on the then existing  
 steam fire-engines, and how the improvement would  
 remedy the defects, strain, and breakages, loss and  
 damages, and various bad results that attended the  
 2416 employment of steam fire-engines, in which the main  
 suction and force piston water-pump was then em-  
 ployed. I do not think it proper or fair to style any  
 part of this written specification as "verbiage."

Q. 27. I now hand to you a metallic model, com-  
 plainant's Exhibit, J, filed in this cause on the 30th  
 December, 1878, before this examiner.

You have read the testimony touching this ex-  
 hibit during your examination on complainant's direct  
 case, which was your first examination in this cause:

- 2417 but in this connection I desire to inquire of you about it; and I request you to take it, and at this time examine it, whatever you may think necessary, and then state what, in your opinion, it is, or what is illustrated by it, if any thing; and also whether you find upon this working model the devices, their arrangement, and combinations with each other, and such as enter into or go to make up the improvements and the invention made by James Knibbs, as stated by him during his examination in this cause, and which are by him described in the specifications, drawings, and claims, in the patent in suit, complainant's Exhibit, C, and such as are used substantially for the purposes claimed by him in that patent. You may make as full answer in detail, or in such other form or way as you may desire, in order that the Court may have a full and clear understanding as to the subject-matter involved in this question, and also involved in the letters-patent referred to herein, giving such reasons therefor as you may wish or deem best to give in your answer.
- 2419 A. This little model, Exhibit J, represents a force and suction piston-pump, with an inner well or piston cylinder connected to an outer shell, leaving a semi-circular vertical chamber on each side of the piston cylinder and on the inside of the outer shell, which are connected together and separated from each other by partitions each side of the inner or piston cylinder, or well, and the outer shell, and which stand vertically in line with the axis of the cylinder and the outer shell, and it also represents the valve-chambers
- 2420 and valves, together with the top and bottom heads of such a pump, as well as the piston-rod and packing-box, the suction branch on the suction side, and the hose and discharge branches on the discharge side of the same. It also represents a pipe to which the vacuum-chamber on the suction side may be secured; in all the above respects substantially like the large-size suction force and piston pumps employed on steam fire-engines owned by the city of New York, and operated by the fire-department of the same. Moreover, it rep-
- 2421 resents a tube, conduit, or waterway, opening into the

force and suction chambers, or branches thereto belonging, and a valve having spindle and hand-wheel for operating the same, with proper packing-box and screw-threads, so that by turning the hand-wheel the valve may be lifted from or closed upon the end of that tube, conduit, or waterway, or opening, to regulate or control the passage or flow of water in excess, or under excessive pressure, in the force side, section, or chamber of the pump, back and into the suction side of the

2422 same. This model, complainant's Exhibit, J, is fully described and fairly illustrated in the patent, complainant's Exhibit, C, being the patent in controversy in this cause. I will state, however, that the air-chambers, as represented in the drawings of that patent, are not found in this model as in the patent shown; and, furthermore, that the handle, piston-rod, and packing-box, as well as the pedestal on which this model pump is mounted, together with two discharge and hose branches found on this model, are not found in the

2423 drawings or illustrations of the patent, complainant's Exhibit, C, which, in view of the description therein given, are not material deficiencies or additions; as this model, complainant's Exhibit, J, when provided with hose and other parts that I have stated as illustrated in the drawings, would become a working model, in addition to its containing and illustrating the parts referred to by me, and found fully described in the patent, Exhibit C. Furthermore, I do find the devices arranged and combined in the manner and for the purposes in

2424 connection with the main suction and force piston water-pump of a steam fire-engine, the devices set out and claimed, illustrated and described, in the patent, complainant's Exhibit, C, for the same purposes as therein stated as model illustrations.

Q. 28. We now come to the commencement of our inquiries concerning each of the several exhibits filed in this cause on the part and in behalf of the defendants, and about which the expert witness, Mr. Elliot, testified during his direct examination by de-

2425 fendants' counsel, and which have also been testified about by defendants' witness, Nehemiah S. Bean of

Manchester, N.H., and by one or two other of the witnesses on the part of the defendant.

I shall put questions to you about those exhibits separately, and in such order as in my judgment I may think proper; and the first exhibit and matter that I desire thus to inquire of you concerning, and to give your testimony about or your opinion of, is the one that I now hand to you, marked "Defendants' Exhibit, Wilder patent," and filed in this cause by defendants' counsel on the 25th November, 1879, and before the present examiner. I desire you to take it and here examine it, and state whether you understand it, and the whole of it; and if you do, and shall so answer, then please state why, in your opinion, you do understand it: and when you have done all this, then please further to state whether anywhere in this exhibit you find the improvements or the invention or the several parts, or the devices and their construction, their connections, arrangement, as well as the combinations of the same, one with the other, as well also as their substantial functions or operations in the manner or by the means and for the substantial purposes as those you have pointed out and specified as being contained in the specifications, in the drawings, and in the claims of the Knibbs patent in suit, dated May 24, 1864, No. 42,920, and represented by complainant's Exhibit, C; and in your answer I desire you to give such reasons as you may wish whereby to sustain whatever answer you shall give to this question, and thus enable the Court to understand the whole matter involved in this question.

A. I have examined the exhibits referred to in the question, and understand the same. The improvement therein set out is for a peculiar valve attached to the feed-pipe and pump to a locomotive engine to regulate the amount of water to be fed into the boiler, and to keep up a circulating flow of water from the tender through a lead and return pipe to the tender, so that the feed-pump may be run continuously, and the water kept in motion through the feed-pipe to prevent it freezing. Mr. Wilder entitles his invention on the



fifth line of the specification, "Useful improvement in the method of supplying feed-water to the boiler of locomotive engines," and in the last paragraph of the first page of the written specification says, "My invention consists in the arrangement of a two-way valve in connection with the pump, the overflow-pipe, and the feed-pipe, by which the supply or feed water may be  
 2430 so regulated that any desired quantity may be conveyed to the boiler, and a surplus, if any, be conveyed through an over-flow pipe back to the tank. By this arrangement the pump may be kept in constant use, thereby lessening the chances of its getting out of order, and preventing it from freezing up in cold weather." Then follows the description by letters and figures; and at the last paragraph of the second page of the specification I quote, "When it is not necessary to feed the boiler, the valve is set so as to bring the open-  
 2431 ing in it in line with the pipe *c* and *d*. The pressure of the steam in the boiler keeps the check-valve from filling, and the water passes from the pump through the pipes back to the tank."

The claim in the patent is for the arrangement of pipes and a two-way cock. I will quote it: "The arrangement substantially as herein shown and described, in connection with the feed and over-flow pipes and pump of a two-way cock, so that, while a constant circulation of water is maintained in said  
 2432 pipes, only such portion thereof as may be desired shall enter the boiler, all as set forth."

I am at a loss to see how this in any way resembles the construction, combination, purpose, or operation of the pump and improvements thereon; to wit, a steam fire-engine suction and force piston-pump, having air-chambers for elastic regulation of suction, and discharge and branch for the suction-hose, and branches for one, two, three, four, or more, lines of discharging hose for spurting water upon fires, and with a conduit, passage,  
 2433 or water way, to relieve excessive water-pressure in the force or discharge chamber, occurring by stopping of one, two, or more streams of water, while other streams are kept flowing by means of a regulating

valve, raising from or closing on to such water passageway, at the convenience and will of the engineer.

Wilder has undertaken to improve the manner of feeding water to a locomotive boiler from the tank on the tender; and he has put a two-way plug-valve into combination with a feed-pump, and a pipe leading to  
 2434 the tank, and another pipe running on from the two-way valve back to the tank, so that the feed-pump may be kept running, and not to freeze up in cold weather.

The improvement in the case of Wilder is upon a feed-pump of a locomotive boiler draughting its water from the tank on the tender in the rear of the locomotive. The improvement of Knibbs is upon the main suction and force piston-pump of a steam fire-engine, to relieve excessive water-pressure in the force or discharge chamber of that pump, by returning the water  
 2435 through a conduit, pipe, or waterway, connecting the force to the suction or receiving side of the same pump, under the control of a regulating valve, convenient of operation by the engineer, by means of a hand-wheel.

The object, or purpose of the improvement, in the case of Wilder on his feed-pump, is to improve the working and running, and allow the same to continue, and thereby prevent its freezing up in cold weather. The object of the Knibbs improvement is, 1st, To prevent the excessive strain upon the pump or engine  
 2436 driving the same; 2d, The bursting of hose in case the water is shut off at the nozzles, or otherwise; 3d, The prevention of waste of water; 4th, The damaging of property by such waste of water; 5th, The flooding of the streets or cellars, or the freezing of the water in the streets, or the tearing-up of the streets; 6th, The prevention of the flooding of the boiler of the engine driving said pump.

The operation of the Wilder improvement consists in turning a two-way cock more or less, according to the  
 2437 amount of water desired to be fed into the locomotive boiler, so as to regulate the same, and allow the pump to run on, keeping up a current through the pipe leading out of the tank, past the pump-cock, and back into the tank.

The operation of the Knibbs improvement is to take off the water under excessive pressure in the force side of a specified suction and force piston and main water pump of a steam fire-engine, thus relieving the excessive pressure by passing the same by a relief valve  
 2438 operating upon or in a waterway, pipe, aperture, or conduit, by lifting the same from or lowering upon, or opening or closing such waterway by valve, spindle, and hand-wheel, convenient of operation, and to any extent desired by the engineer.

The result of the operation or the thing accomplished by the Wilder improvement is, that the feed-pump does not have to be stopped, and the water is not allowed to freeze up in the pipe or in the pump.

The result accomplished by the Knibbs improvement is, 1st, The steam fire-engine is allowed to run on irrespective of the number of streams (being thrown from the main water-pump) shut off. 2d, Neither the pump nor the engine is overstrained or liable to breakage in its employment, nor is the hose liable to be bursted, and so destroyed. 3d, The water is not liable to be wasted. 4th, Property is not liable to be injured or destroyed by such waste of water. 5th, The boiler of the engine is not liable to be flooded, &c.

I therefore say the improvements described in defendants' Exhibit, Wilder patent, are not for the same purpose, have not the same parts or combination of parts, do not include the same combination, do not operate in the same manner, and do not produce the same result or results, as the improvements set out, illustrated, described, and claimed in the Knibbs patent, complainant's Exhibit, C, and cannot be considered like it in any respect.  
 2440

Q. 29. I now hand you "Defendants' Exhibit, Duportail Patent," filed in this cause by defendants' counsel on the 26th of November, 1879, and before the present examiner. Take it, and here again examine it, and state whether you understand it, and your reasons therefor, in order to save time in the putting of this question to you, which would be, if spread upon the record, an exact duplicate of the last question. the only  
 2441

difference being the applying of it to this particular exhibit. Now, the last question is here repeated word for word, and applied to this exhibit, instead of the exhibit concerning which you made your last answer.

2442 Applying that question to this exhibit in the form I have done in this question, I ask the examiner to read it to you, thus applied to this exhibit, the same as he would if spread upon this record *in extenso*.

Adjourned to 10.30 o'clock of Monday, December 22, 1879, by consent of counsel.

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NEW YORK, December 22, 1879.

2443 10.30 o'clock, A.M.

Met pursuant to adjournment.

Present—Hon. Marcus P. Norton of counsel for complainant, and W. C. Betts, Esq., of counsel for defendant.

Samuel P. Kettle, Esq., continues his direct examination, and answers the last question as follows:—

A. I have examined the Duportail patent, being the one referred to in the question, and particularly 2444 the interlineal translation, defendants' Exhibit, translation, Duportail patent, November 26, 1879, which last is a description of the hydraulic press and mandril force-pump used in connection therewith for driving the press when operating upon bars of iron.

I think I understand this part of the mechanism quite perfectly, having studied the same at the Astor Library in this city in connection with a gentleman who read the French specification, and who translated the same for me at that time, when I was studying and 2445 examining the invention. The part produced by the drawing, plate 14, and the defendants' Exhibit, interlineal Duportail patent, which is a description of that drawing, and which is but a small part of the whole mechanism described in the patent, as found in the printed volume of the French patents in the Astor Library, is the part on which I understand myself to be questioned.

In describing this part of the construction delineated in the Duportail patent, it may be observed first, that  
 2446 at the right stands the hydraulic press on the foundation E, being the foundation of the same and of the anvil D. C, the hammer, B, the piston, working inside of the cylinder A, and which is mounted upon the standards F, F, and keyed to the standards F, F by the key C, C; to the piston B extends a piston-rod H, which is pivoted to a bar extending out to a weight or counterpoise K, the same being pivoted between H and K to a standard at I. This counterpoise is supposed to be equal by its location or leverage power, or a little  
 2447 more than equal to the piston B, so that, by its connection thereto, it will raise the piston B with the hammer C. At the left of this hydraulic press, as described by me, will be observed the pump standing over a water-reservoir, tank, or well. This pump is evidently run by power; and its piston, of mandril form, is connected by rod to a crank-shaft with balance-wheel. The inlet-valve at the base of the pump cylinder is not shown, nor the outlet valve leading to the pipe Q. There is no air-chamber shown or described. It will be observed at the right and opposite the top of the pump  
 2448 is represented by the letter *q* a plug-cock, or valve, *q*, in the pipe Q, and that the pipe named extends up to another cross-pipe, R, S, and that between R and S are two cocks, or valves, R, S. It will also be observed that the pipe R, S communicates at one end with the elevated water-reservoir G, and at its other end into the hydraulic press. It will be observed furthermore that there is another pipe, T, leading from the last described pipe between the cock, or valve, S, and the press, and  
 2449 running down into a water-reservoir from which the force-pump takes its draught, and that this pipe has a cock, or valve, at *t*.

Now this mechanism is nothing more or less than a hydraulic press, as entitled in the patent, which is driven by a mandril force-pump, with water-pipes and valves, or cocks, the operation of which I will now undertake to describe. Suppose the piston B of the press to be up, or raised and held to its highest position

by means of the counterpoise or weight K, and it is  
 2450 desirable to force the piston down against that weight  
 on to a bar, or iron, lying on the anvil D, to be welded  
 or worked, the first thing to be done would be to let  
 on the water, probably from the reservoir G, through  
 the pipe R and S, and past the cocks, or valves, *r*, *s*.  
 The cock, or valve, *t* in the pipe T, also the valve *q*  
 in the lead-pipe Q, having been turned or shut off, the  
 flow of water from the elevated reservoir G, through  
 the pipe R, S, into the hydraulic press, would force  
 down the piston thereof; but, in order to obtain great  
 2451 force or power, the cock, or valve, *r* in the pipe R,  
 would have to be closed or shut off, and the valve *q*  
 in the pipe Q opened, and the force-pump put in opera-  
 tion, when water would be thrown into the cylinder of  
 the hydraulic press, driving down the hammer C with  
 as great force as desired. Now, supposing it desirable  
 to raise the hammer C and piston B, the cock *r* in  
 the pipe R would be open, and the cock *s* would be  
 closed; the pump then might run, or not. If it did  
 continue to run, it would pump water from the lower  
 2452 to the upper reservoir.

The cocks, or valve, being left as above stated, to  
 wit, the cock *s* would be closed, but the hydraulic  
 press would not thereby be relieved, nor the piston  
 allowed to rise by the counterpoise; however, this would  
 be accomplished by simply turning the cock *t* in the  
 pipe T, as shown in the drawing, when the water, by  
 its own gravity, would return from the hydraulic press  
 through the pipes S and T, past the cock, or valve, *t*,  
 down into the lower water-reservoir, or tank, or well.

2453 I confess I am unable to see any similarity of con-  
 struction in the mechanism above described by me, or  
 set out in the defendants' Exhibit, Duportail patent, to  
 or with the steam fire-engine, suction and force piston-  
 pump, having the air-chambers, the hose branches, the  
 waterway, aperture, or conduit, as described, illustrated  
 and claimed in the Knibbs patent, complainant's Ex-  
 hibit, C. The Duportail mechanism is for operating a  
 hydraulic press upon iron bars for welding and working  
 the same. The Knibbs invention and mechanism is for

- 2454 improving the working of a steam fire-engine pump, of the specified character, for draughting and throwing water in one, two, three, or more, streams through hose upon burning buildings or other fires. The mechanism in its various parts in the Knibbs invention is different in its elements, and different in its combination, as well as its purpose, from the mechanism illustrated and described in the defendants' Exhibit, Duportail patent. The result of the operation of the Duportail mechanism is the passing of water into a cylinder having a piston-
- 2455 like hammer in part by means of a mandril force-pump driven by power through the medium of certain pipes and cocks, or valves in them to force down the piston, or hammer, of the hydraulic press, when the flow of water from the force-pump is shut off, by turning of certain cocks and valves located in different pipes; after which the water from the hydraulic cylinder, or press, is allowed to flow back into the well, tank, or cistern, through other pipes. It is very difficult, indeed impossible, for me to find any resemblance in the operation
- 2456 of this Frenchman's contrivance to the operation frequently delineated by me before in this examination, as the operation of the suction-force and piston pump, with Knibbs improvements thereon for drawing and throwing water on a fire, for the purpose of extinguishing the same, and as the same is stated and delineated in the patent, complainant's Exhibit, C. The result of the operation of the mechanism described in defendants' Exhibit, Duportail patent, is welding or working of iron bars, &c. The result of the operation of the
- 2457 mechanism described, delineated, and claimed, in the Knibbs patent, complainant's Exhibit, C, is to prevent the overstraining of the specified pump or the fire-engine, or other power driving the same.

The prevention of the flooding under certain conditions the boiler of the fire-engine for driving said pump, the regulation of the pressure in the force side of the suction and force piston-pump, having the air-chambers, the hose branches, &c., so that there will not be bursting or breaking of hose, leading from the pump

2458 to the fire on to which the streams of water are being

spurred, which is liable to occur by shutting off one or more of such streams when the engine and pump are in rapid and powerful operation, and finally, for the prevention of waste of water on the street or otherwise, and all damages arising therefrom. So that I wish to be understood by the Court, as giving it as my decided opinion, that the Duportail contrivance is different in purpose and parts, different in combination and operation, and different in result, and cannot in any good or  
 2459 true sense be said to embody the purpose, parts, or combination of parts, the operation or the result illustrated, described, and claimed, in the Knibbs patent, complainant's Exhibit, C, being the patent in controversy in this case.

Q. 30. I now hand you defendants' Exhibit, "Duplicate Roberts's provisional specification, J. A. S., Ex'r.," certified to on the 25th November, 1879, and dated as being filed September 2, 1862, No. 2,430, and filed in this cause by the defendants' counsel during the  
 2460 examination of his expert witness, Mr. J. Boyd Elliot, and having for its title, "Regulating the Discharge of Water from Pumps." I desire you to take this exhibit and here again examine it, and then state whether you understand it; and hereupon I apply to this exhibit each and every inquiry contained in my last two questions answered by you as shown upon this record. Understanding my question to involve all the inquiries of the last two, you may now proceed to make your answer, giving your reasons for all statements you may  
 2461 make as fully as you may think best.

A. I have examined the exhibit referred to in the question, and read carefully a copy of the provisional specification filed September 2, 1862, and No. 2,430, and believe I understand the same. It purports to be an improvement on water-pump, particularly double-acting piston-pumps, and more especially applicable to that class of pumps that is employed for drawing and throwing water, — to wit, a steam fire-engine pump, — and consists in providing a water passageway from the  
 2462 pressure to the suction side of such a force-pump; or it may be used on the boiler feed-pump, running from the



receiving to the discharging side of the same, or any other pump where it is desirable to regulate the quantity of water discharged; and this waterway has an adjustable valve to regulate the amount of water passing through it, or to close the water passageway, which extends from the suction side to the discharge side or chamber of the double action suction and force pump, to which it is attached; or this water passageway may  
 2163 be connected in the form of a pipe connecting the suction and discharge pipes according to the written specification, defendants' Exhibit, Duplicate Roberts's provisional specification, to which there are no drawings attached, or making a part thereof, and which has no other than a word description, and from which alone I have given the description which I have in my own language. Now, it does not appear from the above description what special construction or branches this pump has, further than it is a double-acting force or  
 2464 other kind of pump, and is capable in its construction of having a suction-pipe attached, and a discharge-pipe, and having a waterway controlled by a valve to open and close the same to any desired degree, and that that waterway may extend from end to end of such pump, or otherwise, or that it may extend from the connecting pipes; to wit, the inlet and outlet; and, furthermore, that the improvement or apparatus is equally applicable to a steam-boiler feed-pump. The inventor says on the first page of the specification, defendants' Exhibit, Duplicate Roberts's provisional specification, in  
 2465 the declaration of his invention "regulating the discharge of water from pumps." Farther down in the third paragraph, he says, "the nature of the invention for improvements in apparatus for regulating the amount of water discharged by a pump, chiefly applicable for the regulating the amount of water thrown by a steam fire-engine, or for regulating the amount of water fed to a steam-boiler," &c.

He declares the object of invention to be as follows  
 2466 in the last paragraph of the first page: "For regulating the amount of water discharged by a pump, chiefly applicable for regulating the amount of water thrown

- by a steam fire-engine, or for regulating the amount of water fed to a steam-boiler." On the third page at the head of the page he states, "Steam fire-engines, as at present constructed, are only capable of throwing a jet of considerable diameter, and are unable to throw a jet of smaller dimensions." About the middle of the third page, the inventor says: "When the pump is re-
- 2467 quired to throw as large a jet as possible, the valve is closed; but when a small jet is required, the valve is partly opened, a portion only of the water forced by the piston from one end of the cylinder will then pass away through the jet, the remainder passing through passage and entering the cylinder at the opposite end," &c. In the fifth line from the bottom on the same page, I quote, "In place of employing a pipe to connect the two ends of the cylinder together, the same object may be attained by employing a pipe, or passage,
- 2468 to connect the suction and delivery pipes, or chambers, of the pump, the pipe, or passage, being furnished with a valve by which the passage through it may be closed as before: this arrangement I adopt when the pumps are single action." In the last paragraph of his specification, he says, "Apparatus such as above described may be applicable to feed-pumps of steam-boilers to regulate the amount of water fed to them. It may also be applied to pumps of all descriptions where it is desired to regulate the quantity of water discharged."
- 2469 That description shows a different purpose of the improvements described from the steam fire-engine suction and discharge piston-pump described by Knibbs in complainant's patent, Exhibit C. It does not show the same combination of parts, it describes a different operation, and the result is not the same. It does not show or describe a steam fire-engine, suction and force piston-pump with a vacuum-chamber and air pressure-chamber with a suction-hose branch in connection with several discharging hose branches. It does not describe
- 2470 the waterway having a valve operated by means of a spindle hand-wheel, or any mechanical equivalent, so as to enable one skilled in the art to know the construction of the same perfectly. It is not a descrip-

tion that is clear, full, and of a character to enable a constructor to carry it out specifically in building a steam fire-engine pump, such as were well known in this country in 1862, and such as were improved by the Knibbs invention set out in the patent, complainant's Exhibit, C.

- 2471 I do not wish to be understood as saying that the description would not inform a constructor that there was a waterway with a valve to regulate the flow of water passing through it, and that waterway was to connect the opposite sides of a double-action pump or a feed-pump, or any pump where it was desirable to regulate the discharge of water drawn or thrown by a pump. That it does do; and it does further state that it is specially applicable and equally so, I draw fairly from the statement, to a boiler feed-pump and to a steam
- 2472 fire-engine pump, and that it is also applicable to other kinds of steam fire-pumps; still it is not the invention set out and claimed by Knibbs in the patent, complainant's Exhibit, C.

- Q. 31. I now hand to you a lithograph marked "Defendants' Exhibit, illustration of 'Eagle' No. 3, W. G. E., Special Ex'r." This is one of defendants' exhibits, which has a photograph and paper in writing fraudulently posted upon the upper left-hand corner. These two papers, namely, the paper in writing and the
- 2473 photograph, are not properly a part of this exhibit. My question, however, will relate to a rotary main water-pump steam fire-engine, known in this case as "Eagle" engine No. 3, and it is to this kind of engine that I direct this inquiry; and, in answering the question, you may refer not only to the lithograph exhibit stated by me, but also to any book or other exhibit in this case on either side, to enable you to answer the question, if you shall so desire. With these as the foundation or predicate of my inquiry, I now apply to
- 2474 this so-called main rotary water-pump steam fire-engine each and every of the inquiries that are contained in my last three questions to you, which you have answered. Now, understanding these to be the matters of which I inquire of you, you may proceed to

answer this question, and to give such reasons as you may think best to give for any statement that you may make concerning the subject-matter involved in this question.

2475 Objected to as immaterial, except so far as it calls for a comparison of the devices shown in the exhibits referred to, with the devices specifically claimed in the Knibbs patent now in controversy.

A. "Defendants' Exhibit, illustration of 'Eagle' No. 3," as a lithographic illustration, excluding the various figures of men, horses, &c., illustrates a steam fire-engine with rotary main water-pump; having a branch or pipe under the main water-pump for connecting suction hose, as I understand it, the cap thereon being marked D in carmine ink; and, as I understand 2476 the description as found in the testimony of several witnesses in this case, the water is drawn through the pipe marked S, in black, beneath the rotary-pump, and driven up through a box marked D, in black, into and through a pipe running horizontally through the water-tank, which has the name "Amoskeag" printed thereon; and as I understand from the testimony, and not from this lithograph exhibit, that tank has a pressure-chamber in the forward end of the same, which is divided off by a solid head located back of the front 2477 end, ten or twelve inches more or less inside of the tank, and between the front end and where the pedestal of the chair of Mr. Mayo is located, somewhere as seen in the lithograph. At the front end of this tank, there are four hose branches and water-gates attached to the outside of the water-tank. I further understand by the testimony of the witnesses in this case, what does not appear from the lithograph, that this rotary main water-pump draws by the interlocking of long flanges or finger gear revolving wheels, one of which is 2478 fast to a shaft extending out and fixed to balance-wheels at its outer ends, where the crank-shaft and pitman of a steam fire-engine is connected for propelling the same. And I further understand from the testimony in connection with rotary water-pump steam fire-engine, "Eagle" No. 3, that the same was origi-

nally designed and constructed for the purpose of throwing four streams of water through leading hose upon a fire.

Now, without further explanation of my understanding of this rotary main water-pump steam fire-engine and its parts, I will state that this is not the kind of pump described or illustrated, or on which improvements made by Knibbs, as are specified and described as belonging; it is not a positive powerful pump of the kind that require the employment of the improvements and the combinations described and claimed in the patent, complainant's Exhibit, C.

In the first place, rotary pumps generally are much more liable to leakage under high water-pressure; they are not the pump that is used generally for raising water to great heights, or discharging it with great force; at least they have not been found and considered, according to my knowledge and information, to be a kind of pump well adapted for that purpose. They are mostly used for moving large amounts of water where it has not to be raised or draughted under great pressure or weight. Indeed, when the attempt has been made, even in the case illustrated and described in the testimony in this case, it has been found difficult to draw or lift by rotary-pumps, owing to the imperfection of the inner construction of the pump, to exceed about one-half of what the piston or ordinary lift-pump would accomplish; so that I am not surprised to find, according to the testimony, that the constructor of this machine, with "Amoskeag" printed on her water-tank, had made the mistake of providing double the amount of discharging hose connections that in practice could be supplied according to the testimony, as I read and understand it; and, furthermore, that in draughting water from a supply about twenty feet below, that he was able to throw successfully but one stream of water.

The steam fire-engine having main water-suction and force piston-pump, like that described in the patent, complainant's Exhibit, C, with suction and construction for draughting water sufficient for discharging

from the force side through four lines of hose coupled or connected to hose or discharge branches on the force side of the same, and having a steam fire-engine of  
 2483 sufficient power, would have successfully draughted the requisite water, and discharged, not one stream alone, but four streams, under the same conditions that in the testimony is found described, as at the trial as I understand it had at Lowell, Mass., with the steam fire-engine having the rotary main water-pump, where, it is said, this lithograph representation could only throw one stream, when constructed for four.

I mean to say that the rotary main water-pump is a different kind of main water-pump from that described  
 2484 in the patent, complainant's Exhibit, C; and, as I have to draw information from the testimony of others in this case to some extent, for the description of the parts and their purposes, the combination and its purpose, and the operation and result of operation, as regards the apparatus illustrated in the lithograph, defendants' Exhibit, illustration of "Eagle" No. 3, I recited so much, as is found above, in regard to the testimony in the case as a justification of my view that the main water-pump is so different from that main water-  
 2485 pump described in the Knibbs patent that it could not be fairly said to require the improvement therein set out and claimed, or that, if it did require it, it still was not the construction described, illustrated, and claimed, in the patent, complainant's patent, Exhibit C.

Furthermore, I understand from that testimony that when this "Eagle" No. 3, with rotary water-pump and water-tank, was put into service in the city of Boston, two of the discharge-gates and hose-connecting branches were permanently closed, and but two ever  
 2486 used; and that, indeed, this character of steam fire-engine, having a rotary water-pump, has been wholly superseded by the steam fire-engine, having for the main water-pump a suction and force piston-pump.

Now, the invention set out, described, illustrated, and claimed, in the Knibbs patent, is improvement upon a suction and force piston-pump of a steam fire-engine; and the characteristics of that pump are, that it has a

vacuum air-chamber on its suction side and a pressure air-chamber on its force side. This, defendants' Exhibit, illustration, "Eagle" No. 3, does not show, neither do those witnesses, as I understand, describe or declare their existence. Again, "Eagle" No. 3 is provided with a large water-tank, for the purpose, as I understand, of holding water to charge the main water-pump. Knibbs has nothing of the kind for any such purpose. In those particulars they are also different. Those witnesses describe, as I understand the description, about one foot of the front end of the tank, which is distant about four or five feet from the main water-pump in "Eagle" No. 3, as the force-chamber of that pump. There is no conduit, or water passageway, running from that force-chamber back into the suction branch or suction-chamber, with a valve to regulate excessive pressure on the force-chamber, by opening the same from or closing the same on such water passageway by convenient means for the engineer; but, on the contrary, indeed, there is no necessity for any such device existing as illustrated in defendants' Exhibit, illustration of "Eagle" No. 3.

2489 There seems, furthermore, to be a discrepancy in the testimony of those witnesses.

It is testified to by them that there was a partition in the water-tank ten or twelve inches back from its front end, to which the pipe conducting water from the pump into the said force-chamber was secured in an air and water tight manner; and that the partition, or bulk-head, in the water-tank was secured to the outer shell in the same manner, as I understand, that the extreme end, by bolts or rivets, as on the extreme end shown.

2490 Therefore it must be apparent to any one looking at the testimony and the defendants' Exhibit, illustration of "Eagle" No. 3, I mean the *lithograph* taken in connection with the testimony, irrespective of any thing else than the lithograph, that the main water-pump is an essentially different main water-pump from that described by Knibbs; that there is no conduit, opening, or water passageway, connecting the parts

illustrated or specified in the Knibbs patent, to be  
 2491 found in the lithograph under consideration and the  
 testimony describing the same; that the conditions in  
 the case of the lithograph, as described in the testi-  
 mony and as illustrated therein, are very different from  
 those existing and found in connection with the main  
 suction and force piston-pump of a steam fire-engine  
 set out in the Knibbs patent, "Complainant's Exhibit,  
 C:" and it is my opinion, first, that the purpose and  
 the parts, as well as the combination and the oper-  
 ation, are different, substantially and materially so,  
 2492 first, as regards the pump; second, as regards the com-  
 bination of other parts with the pump, as between the  
 Knibbs patent, complainant's Exhibit, C, and the steam  
 fire-engine with rotary main water-pump, as found in  
 the testimony and the lithograph defendants' Exhibit,  
 illustration of "Eagle" No. 3, in this case.

Witness says I have not completed my answer, but  
 will do so to-morrow. It is now 4.30 P.M.

Adjourned to Tuesday, December 23, 1879, at 10.30  
 A.M.

2493

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NEW YORK, December 23, 1879.  
 10.30 A.M.

Met pursuant to adjournment.

Present — Hon. Marcus P. Norton of counsel for com-  
 plainant, and W. C. Betts, Esq., of counsel for defend-  
 ants.

2494 Samuel P. Kittle, Esq., continues his direct examina-  
 tion, and proceeds with the completion of his answer  
 to the last question by the complainant's counsel put-  
 ting the following question:—

Q. 32. To enable you to complete your answer to  
 the last question, as you stated last evening you had  
 not completed it, and for the purpose of calling your  
 attention particularly to the internal construction of  
 the main rotary water-pump, as it now appears on that  
 engine, — to wit, "Eagle" No. 3, — I have interrupted



2495 you in the midst of your last answer, as I considered I had the right to do: and hereupon I hand you six photographic views, known as cabinet size among photographers; and I have asked the examiner to mark them as "Complainant's Exhibits, Kittle, Nos. 1, 2, 3, 4, 5, and 6, J. A. S., Ex'r., December 23, 1879." And I also hand you other six photographic views of that same engine, or parts of it, known among photographers as card size, which I ask the examiner to mark "Complainant's Exhibits, Kittle, Nos. 7, 8, 9, 10, 11, and 12, 2496 J. A. S., Ex'r., December 23, 1879;" and I here state to you that these several photographic views were made by S. D. Quint of Manchester, N.H., from the main water rotary-pump of this engine, "Eagle" No. 3, and that the same are exact duplicates of other photographic views already in this cause, and filed therein during the taking of rebuttal evidence by complainant at the city of Boston last summer. I desire you to take these several photographic views and examine them, and then proceed to complete your last answer, 2497 which you said last evening you had not completed.

The same objection.

A. I was going on to speak of the photograph and the paper and manuscript at the upper left-hand corner of the lithograph, defendants' Exhibit, illustration, "Eagle" No. 3, which purports to represent the opposite side of the main rotary water-pump and attachments there o. The photograph pasted on the lithograph represents a tube marked T, running from a square box marked D, formed passage out of and above 2498 the rotary water-pump and down to the suction cylinder or branch to which the suction-pipe of the pump is connected, and which water-tube has a plug-valve V and handle H, being, as I understand, the parts to which my attention is, in some degree at least, if not largely, called. I wish to state that complainant's Exhibit, Kittle, No. 1, as I understand, shows the inside of the rotary main water-pump of the fire-engine "Eagle" No. 3, with the tube and plug-valve running past the open end of that pump, and connected as in the photo- 2499 graph on the lithograph referred to before. Complain-

ant's Exhibit, Kittle, No. 2, more fully shows the interlocking flanges, or finger gear of the pump-wheels, and how the water is drawn in and forced by those gears up into the square box mounted on to the top of the pump proper.

Complainant's Exhibit, Kittle, No. 3, has the shell the shafts, and the gear, with one side and all other parts removed.

2500 Complainant's Exhibit, Kittle, No. 4, shows the shell of the pump proper, with wheels, shafts, top and bottom and one side removed.

Complainant's Exhibit, Kittle, No. 5, shows the opposite side of the shell which has been removed from Exhibit No. 4, of the wheel-chambers.

2501 Complainant's Exhibit, Kittle, No. 6, shows a square box mounted on top of the shell, or rotary water-pump, and which is bolted to the same, and supports or depends from the rear end of the water-tank, and through which the water passes into the pipe, which I suppose to be connected water-tight at the lower side of the tank, and opening into this square box, on to which the tank is bolted. The curve-plate of the box conforming to the curvature of the tank.

Now, returning to the card, complainant's Exhibit, Kittle, No. 9, which represents the foundation or lower or suction plate or valve-box of the main rotary water-pump, and the suction hose-pipe provided with an aperture over which the tube T and plug-valve V, in the tube, which are said to be represented in the photograph pasted on to the lithograph "Eagle" No. 3. 2502 This little card photograph, Kittle, No. 9, also represents a plug with cock and handle, which I understand to be an air-plug. It also represents, as located within the under or suction part of the pump and immediately below the rotating wheels, two hinge valves partly open into the suction waterway.

Complainant's Exhibit, Kittle, No. 8, illustrates the same parts as last above described with the valve closed. The same is true of complainant's Exhibit 2503 Kittle, No. 7, as of the last referred to, only the valves are not shown.

The card illustration, complainant's Exhibit, Kittle, No. 10, is the same as the last referred to, with the addition of a pipe having a plug-cock and handle mounted on to and extending above the suction-pipe, or branch.

The card, complainant's Exhibit, Kittle, No. 11, is the same as the last illustration, with the exception that the hinged valves in the suction-box are seen closed.

2504 Complainant's Exhibit, Kittle, No. 12, is the same as Exhibit 11, excepting the valves last referred to are open, as would be the case when the pump was draughting water.

Now, I understand that this pipe marked T, having valve, or plug-cock V, with handle H, mounted on the suction-tube marked S, and extending to the square box water passageway marked D, which extends between the tank and the main rotary water-pump, to be a water passageway, or conduit, capable  
2505 of being opened or closed by means of the handle, which handle is removable with a square open end adapted to the size of the square end of the plug-cock. Now, as to the purpose of this pipe, and as to its operation and combination with this pump, the same being shown and illustrated in the various photographs, complainant's Exhibit, Kittle, as well as the photograph as described by the writing, which photograph and writing are pasted on to defendants' Exhibit, illustration of "Eagle" No. 3.

2506 I have read the testimony of various witnesses in this cause, and understand that there is a disagreement among them.

I give it as my opinion, however, irrespective of the testimony or views of others, that this pipe marked T, running from the box above the pump to the tube below the pump, might be used very successfully in connection with the hydrant pressure for supplying water to a line of hose to be played by hydrant pressure, if from any cause it should be desirable to do so.

2507 It also might be successfully used to supply the tank with water from the hydrant. It also might be successfully used to allow the return of water when the pump is in motion under steam or other power.

Aside from any testimony, I should not consider that pipe and plug-cock a necessity in this construction of pump and fire-engine for the successful working of the same. I do not think it would be required for the same purposes specified as that pertaining to and covered by the conduit, opening, or waterway, having a  
 2508 relief valve convenient of operation by the engineer on the main water force and piston pump of a steam fire-engine described, illustrated, and claimed, in the Knibbs patent, complainant's Exhibit, C, in this cause.

Q. 38. State for what purpose, if you know, or can form an opinion, the valve in two parts shown in the photographic views stated in the last question, is used; and I desire you state fully on that subject. That is, state how those valves are opened, and by what force or power. State how and by what means they are  
 2509 closed, and what result is attained by their being closed, if any, in the practical working of this main water rotary-pump under steam-power.

A. In the operation of the rotary-pump in draughting water through the suction-pipe and this valve-chamber, the valves would take the position, or nearly the position, shown in the card illustrations, complainant's Exhibits, Kittle, Nos. 9 and 12, hinging, or being opened, by the force of the flow of water under draught of the pump. When the pump is at rest, the leakage of  
 2510 water through and around the flanges or finger gear of the rotaries would close and press upon the valves, which in turn would prevent the water running out, and they would take the position shown in the card illustrations, complainant's Exhibits, 8 and 11.

These valves would have no use or purpose in this pump, were it not subject to great leakage. They certainly would not be required in such a pump as is illustrated and described in the Knibbs patent, complainant's Exhibit, C, in this cause.

2511 Q. 34. Suppose that in the main rotary water-pump of engine "Eagle" No. 3, now under consideration, the valve in two parts referred to in the last question and answer to stand wide open, substantially as shown in complainant's Exhibits, Kittle, Nos. 9 and

12, which I now hand you, while the current or stream of water is being driven or forced past and through the same, either by a very heavy hydrant pressure, or by steam-power applied to this rotary-pump, in the usual way of applying steam-power, and then the hydrant stream to be shut off, or the steam-power shut off, so that the rotaries, or rotary valves, shown on complainant's Exhibits, Kittle, Nos. 1 and 2, now shown you, should cease to operate by reason thereof, what effect would be produced in that valve made in two parts as there shown?

A. They would immediately close by the return or downward current of water through the pump.

Q. 35. I now repeat the last question in all its parts and all the conditions last stated; and thereupon I ask you to state what effect would be produced, were not this valve made in two parts, as shown, not contained, in that valve-chamber. I mean this: suppose there was no valve at all there, and a current of water was being passed through that point by means of those rotaries, or rotating valves, under steam-power as stated in the last question, and then that that steam-power be suddenly shut off?

A. Why, the water would run back by the rotaries, and run out from the pump down to the place of suction unless there was hydrant or water pressure to prevent it; and I have no doubt about the purpose of those valves being to prevent such leakage and return of water as that, and thereby to save the necessity of charging the pump of the steam fire-engine from the tank above the pump, or otherwise.

Q. 36. In each of the six card-size photographs which I now hand you marked "Complainant's Exhibits 7, 8, 9, 10, 11, and 12, you will observe a faucet, or plug-cock. If you know, or can form any opinion about it, state for what purpose that faucet or plug-cock is used in that suction-pipe, and, should that be opened during the operation of the main water-pump under steam-power, what effect, if any, would be produced upon that pump?

A. I understand that to be a vacuum-cock, or a

plug-cock, to break the draughting power of the pump. It certainly would do that if it were rotary.

Q. 37. Have you read the defendants' evidence in this cause as printed to the date of the commencement  
2516 of the examination of Mr. Elliot, by defendants' counsel?

A. I have.

Q. 38. And have you also read the printed evidence on the part of the complainant, including the rebuttal proofs that were taken in Boston last summer?

A. I have.

Q. 39. And state whether you have carefully read the printed record of evidence referred to in the last two questions.

3517 A. I have.

Q. 40. I now hold in my hand a printed report of the joint special committee on the public trials of steam fire-engines in the city of Boston in the year 1858, dated September 30 of that year, and headed "City Document, No. 37," and filed in this cause by defendants' counsel during the examination of the witness Nehemiah S. Bean, at Manchester, N.H., and marked and filed as "Defendants' Exhibit, report of trial," before special examiner W. G. E. I desire you  
2518 to take this printed report; and, in answer to this question, I desire you to read from it such passages as I have marked in pencil (for which offence I hope not to be indicted by a grand jury), which you will find on pages 10, 11, 15 and 16; and after that I shall ask you one or two more questions with reference thereto: and, in reading, you may begin at such points as shall make full sentences, of which you may be your own judge.

A. The committee, after stating the kind of hose they had provided for steam fire-engines, to wit, leather  
2519 hose, state on the ninth page of the exhibit referred to in the question, the fourth line from the bottom of the page: "But some doubt having been expressed whether any leather hose would be able to sustain the enormous pressure of the streams from steam fire-engines when exerting their utmost power." I continue on the tenth page: "It was considered prudent and advisable to

procure two hundred feet of extra India-rubber hose, as a reserve in case of accident. The committee, however, are gratified to state that this precaution proved  
 2520 unnecessary, as the leather hose was sufficiently strong for all purposes, and sustained without injury an estimated pressure of nearly two hundred pounds to the square inch, a pressure which burst the eight-ply India-rubber hose of the Philadelphia engine." I request special attention to the words above quoted, "a pressure which burst the eight-ply India-rubber hose of the Philadelphia engine."

On the following, the eleventh page, where the engines which took part in this trial in competition are  
 2521 named, with the builders and their place of business, I find the Philadelphia engine, which I suppose to be the one referred to in the previous quotation in the list of competing engines, and indicated by A, Philadelphia, built by Reany, Neaffie, & Co., Philadelphia. On the fifteenth page of the exhibit referred to in the question, I find a description of this Philadelphia engine, commencing at the fourth paragraph. I quote:—

"I. The general construction of 'The Philadelphia'  
 2522 was more simple than either of the others, being based upon two cylinders at right angles to each other. One of those cylinders was upright, and comprehended the boiler and steam generating apparatus; to this another cylinder of plate iron was fastened by a flange and rivets in a horizontal position, upon which was attached all the steam and hydraulic machinery; the interior of the cylinder was divided into vacuum and water chambers, which were thus enclosed and protected.

"This cylindric form of structure possesses great ad-  
 2523 vantages; for, in addition to its simplicity and compactness, it is firm and inflexible against pressure or strain in any direction."

On the sixteenth page a general description of the competing engines is still continued, and the opinion of the committee is expressed as to the kind and capacity of steam fire-engines most desirable for the city of Boston. I quote from the sixteenth page, commencing at about the middle of the page:—

2524 "It is an error to suppose that we want an engine  
that will throw the greatest number of streams, or  
the largest quantity of water; for this is clearly dem-  
onstrated in the 'Miles Greenwood.' A single stream  
from an engine, quickly brought to act upon the fire, is  
generally all that is required. An engine calculated to  
play four, six, or eight streams, cannot be made to play  
only *one* without a great waste of power and strain  
upon the working parts; and there is also a difficulty  
in many cases in obtaining a sufficient supply of water  
with a reasonable amount of hose. All the engines at  
2525 this trial were too large and powerful for a single  
stream. This is a serious objection, and compromises  
their utility very much in a city like this. Occasion-  
ally a large quantity of water may be required to sub-  
due a fire; but generally a single stream, which may  
be continued for an indefinite time by the enduring  
power of steam, will be all that is necessary."

Q. 41. State whether you find anywhere in the  
pamphlet exhibit referred to in the last question and  
answer, any reference whatever, or any thing said,  
2526 about what Nehemiah S. Bean and Joseph L. Perry,  
two of defendants' witnesses, have been pleased in  
their testimony to denominate a "relief pipe," or "re-  
lief valve" and "relief cock"?

A. I do not.

Q. 42. Do you find anywhere in that pamphlet any  
reference directly or indirectly, or any mention by word,  
sign, or thought, of the improvements and invention  
described in the written specifications, and shown in  
the drawings and claims of the Knibbs patent in suit  
2527 represented by defendants' Exhibit, C?

A. I do not.

Complainant's counsel here offers in evidence the  
original letters-patent issued by the Commissioner of  
Patents to James Knibbs and Marcus P. Norton of  
Troy, on the twenty-fourth day of May, 1864, No.  
42,920, the same being the original letters-patent speci-  
fied in and set out by the Bill of Complaint in this  
cause, and upon which this suit is founded. The same  
was filed on the 4th November, 1874, as evidence in a



2528 suit pending in the Northern District of New York, which I ask the examiner to mark and file in this cause as "Complainant's Exhibit, C, Knibbs's original patent, December 23, 1879, J. A. S., Ex'r." Complainant's counsel reserves the right to withdraw the same from this cause at any time after the final hearing, there being a certified copy of the same patent already in this cause.

Q. 43. I now hand to you, for your examination, and from and about which I desire you to make an-  
 2529 swer to this question, a lithograph view of a steam fire-engine, known by the name of "Philadelphia," and marked "Defendants' Exhibit, Lithograph, Philadelphia Engine, W. G. E., Special Ex'r.," and filed by the defendants' counsel in this cause, as an exhibit, during his examination of the witness Nehemiah S. Bean, at Manchester, N.H. I desire you to take it, examine it, and then state whether in that exhibit you anywhere find the improvements and the inventions specified in the written specifications, in the drawings,  
 2530 and in the claims of complainant's patent in suit, known as the Knibbs patent, of the date of February 24, 1864, and numbered 42,920, and represented by complainant's Exhibit, C; and, in answering this question, you may pursue such course with reference to other exhibits on the table before you, in this cause, or with the printed record on both sides, as you shall deem to be best, in order that the Court may have a clear understanding of the matter, always giving fully your reasons for any thing you may state as an answer  
 2531 to this question.

Objected to as immaterial, except as it calls for a comparison of the devices shown in the exhibit, with the devices specially claimed in the patent in controversy.

A. I have examined the defendants' Exhibit, lithograph, Philadelphia engine. It is a steam fire-engine, having a vertical boiler connected to a horizontal tank; said tank, at the fore end, resting and being mounted upon the bolster between the forward wheels of the car-  
 2532 riage. On the horizontal cylindrical tank are mounted

the engine and a main water suction force and piston pump, operated in a horizontal line, and provided with a fly-wheel which is also mounted upon the tank, and which operates to regulate the running of the engine and pump machinery. The driving-engine acts directly upon the piston pump.

2533 Above the pump, standing vertically and centrally over the same, is the air-pressure chamber, from the base of which extend three hose branches with water-gates for connecting leading hose for spurting water upon fires. At the front end of the horizontal cylinder, or water-tank, is found a suction-hose branch, or pipe, for connecting the suction-pipe and hydrant.

2534 Vertically, in a line with the air-pressure chamber, and extending from beneath one of the water-gates in the pressure-chamber, extends a pipe, or tube, or waterway, down to the lower side of the tank below the suction-chamber of the pump, and is screwed or tapped into the water-tank near its base. A short space above the lower end of this pipe a valve is located, with a spindle and hand-wheel for operating the same, which may be seen just above, and which is partly hid by the forward wheel. Above this valve, and nearly on a line with the top of the water-tank, is a horizontal pipe connecting to and with the last described vertical pipe. This horizontal pipe runs back to within five or six inches of the fire-box to which the rear end of the water-tank is secured; and there said pipe turns downward; and, when on a line with the 2535 bottom of the water-tank, it passes horizontally into the fire-box, and then continues, doubtless, up into the boiler. Near where this pipe enters the fire-box, is located a valve with spindle and hand-wheel for operating the same, like the one described and located in the vertical pipe, partly back of the forward wheel.

From the testimony which I have read in this case, I understand these pipes, with their valve connections, are for the purpose of feeding water to the steam-boiler, and are operated in the following manner: 2536 Suppose the engine draughting and spurting water upon a fire, the valve back of the forward wheel and the ver-

tical pipe being closed, the water-pressure and water-flow under pressure would communicate from the pressure-chamber of the main water-pump through the vertical pipe connected therewith, thence through the horizontal pipe running back towards the fire-box and steam-boiler, along the side of the cylindrical water-tank, thence down to the valve near the fire-box (and the valve being raised or opened), through the pipe up  
 2537 into the boiler; and a steady stream is thrown into and through this pipe the same as would be forced through the hose-pipes connected with the force-chamber of this fire-engine main water-pump, subject to control, however, as to amount or flow, by the valve and hand-wheel near the fire-box, at the discretion of the engineer.

I understand from the testimony of the witnesses referred to in the question, that this pipe and valve connection, for the purpose of feeding the boiler, has  
 2538 been subject to alterations and changes; and that after its first application to the original fire steam-engine, "Philadelphia," it was found necessary to employ a feed-pump in connection with it to supply water to the steam-generating boiler; and subsequent thereto it was found necessary to employ another valve with wheel and spindle, which was located in the vertical pipe between the horizontal pipe and the force-chamber of the water-pump.

Now, suppose the valve with hand-wheel in the vertical pipe, as stated in the testimony, were located  
 2539 between the horizontal pipe and the pressure-chamber as a first condition, the upper valve referred to being closed, shutting off the water-pressure from the force-pressure of the main water-pump; and, secondly, suppose the valve open in the vertical pipe which is located below the horizontal pipe, and the valve leading into the fire-box and boiler be open; and further suppose, what does not appear in this drawing or by the description by the witnesses, clearly, to wit, that this  
 2540 vertical pipe connects through the tank into a suction-chamber on the suction side of the main water-pump or some branch opening into the same; and suppose

the main water-pump working with full power and rapidity,—it seems to me, then, under the above conditions, with such valve and waterway connections, the water would be drawn out of the boiler, or steam-generator, by force of the suction of the main water-pump, and could not in any case be supplied to it under such conditions; but, suppose all the conditions remaining

2541 the same, the upper valve in the vertical pipe be now open, it still would appear, as the suction must be at least equal or greater than the force in the regular running of the pump, and as the passage to the suction side is equally direct, that the same state of facts may exist, unless one of the discharge-gates be closed, or the lower valve in the vertical pipe partly closed, so as to make the pressure more than equal to the suction power of the main pump; but suppose again that

2542 there is no reservoir of water in what has been termed the circular horizontal water-tank, but that that tank is really nothing more than a branch of the suction side of a main water-pump (but it is not a branch),—in view of the fact stated, that there were two valves in the vertical pipe, or waterway, for in that case the supply to the boiler could be easily regulated by opening either one of the two valves in the vertical pipe and closing the other, where a feed-pump is employed.

Now, if this circular cylinder, which in my judgment must be about one and a half feet in diameter, and in

2543 the neighborhood of eight feet long, is made of wrought iron, as stated in defendants' Exhibit, report of trial, and has a partition for a vacuum-chamber on the suction side of a main water-pump, it is not here shown with any partition, nor is any vacuum-chamber here shown; so that, if it be true that it is a water-tank, then the vertical pipe connection, or tube, with one or more valves, was capable of discharging water from the force side of the main-pump through and under the first or upper valve in the vertical pipe, thence through the

2544 horizontal pipe down under or by the valve, through the fire-box, up into the boiler, but not from the water-tank, or reservoir, without an auxiliary draughting force, which would be supplied by the introduction of a

boiler feed-pump, such as the testimony informs me was afterwards supplied; and, with such feed-pump, the water would be drawn from the lower side, or bottom of the tank, by opening the lower valve in the vertical pipe, and closing the upper one.

I will not pretend to be positive, and indeed it is  
 2545 impossible to be so from the evidence and illustration, Philadelphia engine, as to what construction exists inside of this long cylindrical vessel secured at its rear end to the fire-box, and on top of which is mounted the steam-engine and the main water-pump with fly-wheels, air-pressure chamber, &c. I will not pretend to be positive as to whether the suction-pipe is stopped at the front end of that horizontal cylinder, or whether it extends through and along into and connects with some sort of vacuum-chamber and suction-chamber of  
 2546 the main water-pump; but whether it does one thing or the other, or what the plan of the internal construction of this water-tank is, I leave for other explanation. I will simply state that the defendants' Exhibit, Philadelphia engine, as illustrated by the lithograph, in my opinion, has not a wrought-iron horizontal water-tank, as the Philadelphia engine is stated to have in defendants' Exhibit, report of trial, as I have quoted therefrom in a previous answer; and I give it as my opinion further, in view of the description given in the testimony as to construction and operation, and as I understand the defendants' Exhibit, Philadelphia engine, lithographic illustration, that the pipe and valve connections which I have referred to, and which are somewhat extendedly described by me above, and which is described in the testimony, is a valve and pipe connection purely for feeding water to the boiler, or steam-generator, and was used for that purpose in the early operation of the same, and for several years, and possibly unto this time.

2548 (I have to be excused now, and will finish the answer to-morrow, on account of business; when I will resume the answer to this question.)

Adjourned by consent of counsel till 10 o'clock of Wednesday, December 24, 1879.

NEW YORK, December 24, 1879.  
10 o'clock A.M.

Met pursuant to adjournment.

Present — Hon. Marcus P. Norton of counsel for  
2549 complainant, and C. W. Betts, Esq., of counsel for  
defendant.

Samuel P. Kittle, Esq., continuing his answer to the  
pending question, testifies as follows: —

As before stated by me, the invention of Knibbs, as  
illustrated, described, and claimed in the patent, com-  
plainant's Exhibit, C, in this cause, is upon and per-  
tains to the main water-pump of a steam fire-engine, the  
pump being a suction and force piston-pump, and hav-  
2550 ing a vacuum air-chamber, a suction-hose branch, and  
suction-chamber on the suction side thereof, and a  
pressure or force chamber with air-chamber and hose  
branch or branches, and water-gates on the force side  
thereof, and a conduit, opening, or waterway, connect-  
ing the force and suction chambers of such a pump, and  
that waterway having a regulating valve which acts as  
a partition between the force and suction chambers of  
the pump, and which is so constructed as to be readily  
operated; to wit, raised or lowered to open or close the  
2551 waterway, passage, or conduit, by the engineer.

Now, the main water-pump illustrated by the litho-  
graph Philadelphia engine, is a suction and force  
piston-pump for a steam fire engine, and has a force-  
chamber and hose branches, and an air-pressure cham-  
ber, and in the above particulars is substantially like  
the main water-pump described in the patent, com-  
plainant's Exhibit, C, though specifically different in  
some immaterial respects.

But in regard to the suction side of the pump illus-  
2552 trated in defendants' Exhibit, Philadelphia engine, and  
according to the description of the witnesses in this  
case describing the same, it seems to me there are wide  
and substantial differences here found, or at least the  
construction described and claimed in the Knibbs

patent cannot be said to be found illustrated or shown by the defendants' Exhibit, lithograph Philadelphia engine.

The large cylindrical vessel said to be a water-tank, on to which the steam-engine, the fly-wheel, the main  
 2553 water-pump, air-chamber, &c., is mounted, and to which the same is fixed and secured, cannot properly be said to be a suction air-chamber, nor can it be said to be a suction-hose branch. Furthermore, what the manner of inside construction is, if any special or particular plan exists, does not appear; and if the front end projecting screw-cap tops, four or five in number, located around and beneath the suction-hose, pipe, or coupling, on the forward end of the tank, are what Mr. Elliot has stated, hose-branches or places to connect or couple  
 2554 hose for whatever purpose, then the construction becomes more complicated, and still more difficult to be understood.

So that I give it as my opinion that the construction and operation, the parts and purposes, the design and the duties to be performed by the parts and combination of parts found on the suction side, or as a part of the construction of the suction side, or chamber of the main water-pump, the lithographic illustration of which is found in defendants' Exhibit, Philadelphia engine,  
 2555 and the word "description" of which is found in the testimony pertaining thereto in this case, is not the same, but is substantially and materially different from that found, illustrated, described, and claimed as the Knibbs invention, or part of the combination making up Knibbs's invention, in the patent, complainant's Exhibit, C.

And finally I give it as my opinion, that the vertical pipe running down from the pressure-chamber of the main water-pump, as illustrated in defendants' Exhibit,  
 2556 Philadelphia engine, and terminating in the cylinder, termed water-tank, is not for the same purpose as the conduit, pipe, opening, or waterway, illustrated and described in the Knibbs patent, complainant's Exhibit, C, but that it was originally designed for a feed-pipe, or connection, to supply water to the boiler

of the engine, and that in the alterations subsequently made thereon and therefor, to wit, the adding of another cock, or valve, and boiler supply pump, did not change its purpose. I furthermore give it as my  
 2557 opinion, that this vertical pipe with one or two cocks, or valves, and with or without a feed-pump connected thereto, is not the pipe combined with a regulating valve in the manner and for the purposes illustrated and described in the Knibbs patent, complainant's Exhibit, C, and that it does not operate, and cannot be operated, in the same manner and for the same purpose as that part; to wit, the pipe, conduit, opening, or waterway, with regulating valve, combined with the pump illustrated and described in the Knibbs patent,  
 2558 complainant's Exhibit, C. I therefore say that I do not find in the lithograph, defendants' Exhibit, Philadelphia engine, either illustrated, shown, or explained, or described in connection with the testimony, the invention illustrated, described, and claimed as the Knibbs invention in the patent, complainant's Exhibit, C: that is to say, I do not find the devices and their duties, the elements and their combinations, the purpose of the parts and of their combination, the operation performed or the result of the operation, in the defendants' Ex-  
 2559 hibit, Philadelphia engine, that constitutes the invention of Knibbs, as illustrated, described, and claimed in the patent, complainant's Exhibit, C; but I do find different elements or parts, and different combination of parts, different purpose of parts and of combination of parts, and different operation and result of operation; and that these differences are substantial and material, as above described and explained more fully.

Q. 44. Then briefly, if I understand you in your last answer correctly with reference to a vertical pipe  
 2560 having two bends in it, and extending from the under side of the air-chamber D, downward, and having also a pipe extending horizontally from the left towards the vertical steam-generating boiler, and then bending downward to the under side of the water-tank, W, T, and thence passing horizontally into the lower part of the fire-box underneath the steam-boiler, and then



having a valve, or gate, so far as this lithograph drawing is concerned, there is shown a system of pipes and their connections with suitable valves, or faucets, or  
 2561 plug-cocks, arranged therein for the purposes of supplying the boiler with water for steam generating purposes, either from the force part of the main water-pump, or from the water contained in this water-tank W, T. I say that so far as the devices I have mentioned are represented and shown by this lithograph, they are substantially as and for the purposes I have stated in this question.

This is the substance of my understanding of your last answer, in so far as it relates to the devices I have  
 2562 enumerated. Am I correct, or am I incorrect, in this brief understanding in this special subject to which my question is limited?

Objected to as assuming that the part marked W, T, is a water-tank, and the vertical pipe T not being connected with the suction side, which is directly contrary to the testimony.

A. You are correct in the main. But in one particular, if I understand your question, I wish to state that the boiler would not be fed from the tank without  
 2563 a boiler feed-pump with this arrangement of system of pipes, or valves, or plugs; but, to the contrary, where the two valves, or water-gates, open, the water would run out of the boiler into the tank, unless a feed-pump or a boiler check valve were interposed to prevent; and, furthermore, with a feed-pump the water could be readily fed into the boiler from the tank.

Q. 45. And, so far as appears from this lithograph defendants' Exhibit, Philadelphia engine, and from all that you can see or know or *guess*, or in any other  
 2564 manner form an opinion from this lithograph Exhibit, *per se* the lower end of the vertical pipe T is connected with the lower part of the water tank W, T; and, in answering this question, I desire you to make an extra draft upon your inventive mind, or you may guess, or suppose, or do any other thing you deem best in making your answer to this question, being strictly confined, during every part of your answer, to this

lithograph Exhibit, defendants' Exhibit, Philadelphia engine, which I now hand you to read.

2565 A. It is.

Q. 46. During the cross-examination of the defendants' witness, Joseph L. Perry, and at re-cross Q. 253, this was asked him: "Did you ever construct an engine in your life with a relief pipe like, and only like, the relief pipe and relief valve on the steam fire-engine 'Arba Reade,' containing but one valve, and precisely the same connection of relief pipe with the force and supply chambers, as found in that engine? I desire you to say yes, or no, to this question, and no other  
2566 answer." To which he answered, —

"No; not on a steam fire-engine:" and thereupon this question was put to him, —

"Do I understand you to say, in your direct examination, that there are two valves placed upon the pipe which you assume connects the air-chamber with a suction or supply pipe of the steamer "Hibernia"? to which he answered, "Yes, there are two valves there;" and thereupon this question was asked, —

"Is it between these two valves you have named in  
2567 the last question and answer, that the pipe is connected which supplies the boiler with water?" and he answered, —

"It is."

Now look, if you please, at defendants' Exhibit, lithograph Philadelphia engine, concerning which you have rendered testimony to-day, and state whether you find anywhere in that lithograph view of an engine the two valves spoken of by Mr. Perry in his evidence which I have just quoted.

2568 A. I do not.

Q. 47. State further, if you please, whether, from that evidence which I have just quoted, you find a pipe which supplies the boiler with water, extending from between the *two valves* in the vertical pipe named by the witness Perry, anywhere shown upon that same lithograph exhibit.

A. No: the upper valve in the vertical pipe is not shown.

Q. 48. I now quote from the testimony of Joseph  
 2569 L. Perry, as stated by him with reference to a litho-  
 graph filed during his direct examination, just after his  
 answer to direct Q. No. 4, and referred to by him in  
 his answer to that question, which was at that point in  
 his evidence filed and marked as "Defendants' Exhibit,  
 No. 1;" and, being cross-examined about that exhibit  
 at X Q. 102, he was asked, "How many valves were  
 placed in that pipe and its connections, which you used  
 for the purposes for which the relief valve, in your  
 opinion, is used?"

2570 His answer was, "There was only one at the time of  
 the trial in December, 1857; after that trial, and before  
 the feed-pump was applied, there were two; after the  
 feed-pump was applied, there were three." Next after  
 which he was asked, "Which engine was built first,  
 'The *Philadelphia*,' or 'Hibernia'?" To which he an-  
 swered, "'The *Philadelphia*' was built first, but less  
 than a year before." Now, will you please look at this  
 same lithograph, defendants' Exhibit, Philadelphia en-  
 gine, about which you have given evidence to-day,  
 2571 and then state whether you find in that lithographic  
 view the two valves which Perry swears were placed  
 on a pipe which he called a relief pipe, and, further,  
 whether you find there the three valves spoken of by  
 Perry; namely, the two valves which were in what he  
 called a relief pipe, and one other valve which was in  
 the pipe supplying the boiler with water for steam  
 purposes,—the first two valves being located, as he  
 testifies, one *below* and the other *above* the horizontal  
 boiler feed-pipe, connected at one end with this vertical  
 2572 pipe having the two valves.

A. I do not. They are not to be found in this il-  
 lustration.

Q. 49. The defendants' witness, Joseph L. Perry,  
 at X Q. 125, was asked about the making of altera-  
 tions to the steam fire-engine, which he in that testi-  
 mony called "The *Philadelphia*," and that inquiry was  
 followed up by several others on the same subject; and,  
 in answer to X Q. 130, he said,—

"It did: both valves remained there, one above, and

2573 the other below the supply-pipe; and I mean by the supply-pipe the pipe that supplies the boiler with water: these valves were larger than the valves that were on before the alteration, and adapted to the larger pipe;” and at X Q. 136, he was asked, —

“In the pipe supplying the boiler with water, and leading from the relief pipe to the boiler for that purpose, was there a valve of any description?” He answered, —

“There was.”

2574 Whereupon, the next question put to him was, —

“Were the two relief valves contained in this relief pipe of the same size in construction and of the same capacity, or nearly so, one with the other?” And his answer was, —

“They are exactly the same.”

Now, please look at this same lithographic view of the engine “*Philadelphia*,” defendants’ exhibit, about which you have testified to-day, and state whether you find in that exhibit all of those devices which Perry

2575 swears that were there under the arrangement and combination, so as to supply the boiler with water for steam purposes, either from the suction or discharging side of the main water-pump of that engine in 1858.

Objected to unless the inquiry is confined to the quotations made, as it is not alleged by Perry that the lithograph represents the relief valve in “*The Philadelphia*.”

A. I do not find the two valves in the vertical pipe referred to, nor the boiler feed-pump in the lithograph, 2576 defendants’ Exhibit, Philadelphia engine.

Q. 50. Mr. Perry, during the re-direct examination, was asked by defendants’ counsel a series of questions appertaining to the several valves to which I have called your attention last above, and as to their purposes; and, finally, in answer to re-direct Q. 207, that old gentleman very truthfully stated, with reference to the upper valve, “It is to supply the pipe leading to the force-pump, with water from the discharge side of the main pump; and, when closed, the feed-pump 2577 can be supplied with water by opening the lower valve

from the receiving side of the pump, — which cannot be done in any other steam fire-engine as at present built.”

And then was asked, whether there were any other offices or uses to which these valves *might* be applied. I will quote the question on that subject; namely, —

“Are those its only uses and offices?” He answers, —

2578 “In case of receiving water from the receiving side, it then can be used as a relief valve to the main pump *when* taking water from the receiving side to supply the boiler with water.”

Whereupon he was asked this question, —

“Do your answers to the last two questions state *all the uses* and offices of the upper valve?” His answer was, —

“They do.”

Now, let me ask you whether you find in this same lithograph view of engine “Philadelphia” this upper  
2579 valve spoken of by Perry in this evidence?

A. I do not.

Q. 51. Upon further re-direct examination of Mr. Perry by defendants’ counsel, he was asked by that counsel this question: Re-direct Q. 213, “How was the boiler in the steam fire-engine “Philadelphia” supplied with water at the time of her construction, as you have stated?” He answered, —

2580 “The boiler was supplied with water from the discharge side of the main pump, without any other pump or appliance, and could not be fed in any other way, as she was first built;” and thereupon the same counsel asked him, —

“For how long was she used as you have described, and from what time to what time?” And he answered, —

“About eight months, from the latter part of December, 1857.”

And thereupon that same counsel asked him this question: “During the time mentioned in your last  
2581 answer, I understand you to say there was but one valve in the relief pipe of that engine: Is that so?”

His answer was, —

“That is correct: there was but one valve in the relief pipe.” And defendants’ counsel, forgetting the side of the case he was on, put this question, Re-direct Q. 216, “Did you afterwards place another valve in that relief pipe? if so, when?” And the answer was, —

“I placed another valve in that relief pipe after I attached the force-pump for supplying the boiler, about  
2582 eight months after the engine was built.” And that counsel, still forgetful, put this question, —

“Why did you add the second valve to the relief pipe? and where in it was the valve you added placed with reference to the first valve?” The witness answered, —

“I added it for the purpose of supplying the boiler feed-pump with water from either the discharge or receiving side of the pump when the engine was in operation, without passing water through the relief: it was  
2583 placed on the relief pipe, between the boiler feed-water pipe and the air-vessel or discharge side of the pump, and above the other valve in the relief pipe. And he was further asked by that same counsel, “Was the upper valve placed there for any other purpose than you have stated?”

His answer was, “It was not.”

Now I desire you to look at this same lithographic view of the engine “Philadelphia,” and state whether you find there all of the several devices that I have  
2584 mentioned in this testimony of Perry’s that I have quoted; and, if not, which part, if any, is absent from that photographic view?

A. The boiler feed-pump and the upper valve in the vertical pipe were not shown or illustrated in the lithographic view, defendants’ exhibit, Philadelphia engine.

Q. 52. I now hand to you defendants’ Exhibit, Duplicate Bramah patent, filed in this cause by defendants’ counsel on 26th November, 1879. I desire  
2585 you to take it, and here again examine it, and then state whether you find in that exhibit anywhere shown or described the improvements and the inven-

tion described in the written specifications, and shown in the drawings and embraced within the claims of the Knibbs patent in suit dated May 24, 1864, No. 42,920, and represented by the complainant's Exhibit, C, one being the original patent, and the other a certified copy of it, upon which this suit is founded; and, in answering this question, you may, if you desire, 2586 refer to any model or exhibit or printed evidence in this cause now on the table before you; and I desire you to give reasons for any statement you may make, so as to enable the Court to understand from all the testimony in this cause the subject-matter about which you are asked to testify in this question.

Objected to as immaterial, except so far as it calls for a comparison of the devices shown in the Bramah patent with the devices specifically claimed in the Knibbs patent.

2587 A. I do not find the invention set out in the Knibbs patent, complainant's Exhibit, C, in the defendants' Exhibit, Duplicate Bramah patent, filed November 26, 1879, either illustrated or described therein.

The last-named exhibit illustrates and describes a hand fire-engine or suction and force-pump, mounted with a wooden water-tank of circular form, about eight or ten feet long, and about two and one-half feet in diameter, with the well known old style hand-brakes for working the pump. The pump being provided 2588 with specific valves located in a shell, or short cylinder with heads and fixed fans, on a main cylinder, or shaft, to which the brakes, or levers, are connected, or wings, which fans are also provided with valves, and operated by an oscillating or vibratory motion in a section of a circle. The pump cylinder is provided with an inlet pipe and a two-way cock, or valve, controlling the inflow or suction current of water, so that in operating the pump it may draw from a pond or cistern, and discharge on the opposite side of the pump 2589 on to the fire under compressed air-pressure in an air-chamber through a hose and nozzle connection, or by means of a sliding cock on the opposite side of the air-pressure chamber discharge into the tank, which is

mounted on the wheels with the pump, to fill the tank for the purpose of transporting water to some place distant from the pond or cistern water-supply, whereby moving the sliding valve, or gate, S, by means of which the reservoir, or water-tank, has been filled, and connecting the hose and at the same time opening the suction-cock in the inlet pipe, so that the arm communicating with the water-tank will be open, and the opposite arm closed. The water may be draughted by the pump from the tank instead of from the cistern, pond, or otherwise, and thrown through the hose-branch and nozzle on to a fire.

The witness has not completed his answer; and an adjournment is taken by consent of counsel, to Friday, December 26, 1879, at 10 A.M.

2591

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NEW YORK, December 26, 1879.  
10 o'clock A.M.

Met pursuant to adjournment.

Present — Hon. Marcus P. Norton, of counsel for complainant, and C. W. Betts, Esq., of counsel for defendant.

2592 Samuel P. Kettle, Esq., continuing his answer to pending question, testifies as follows: —

On turning the two-way cock, or faucet, and shutting off the water-tank, thereby and at the same time opening to the cistern, the machine may be worked in drawing water from such cistern, reservoir, or pond, or other outside source of supply, drawing the water into and forcing the same from the pumping mechanism with a force-chamber under air-pressure, and through the branch, the hose, and nozzle, and so on to the fire.

2593 That is to say, this hand fire-engine with specific character of pump, by means of the two-way valve T underneath the same, and which is operated by the handle X (see Figs. 2 and 3) in throwing water on to a fire, or otherwise, may draw either from a reservoir



or other supply without, or from within the reservoir mounted on the wheels of the machine.

Furthermore this hand-brake fire-engine has a slide-gate at S (see Figs. 2 and 3), which being opened, and the suction of the pump from without being opened,  
 2594 the pump may be worked to draw water from a cistern, pond, or other outside source, and forced through the water-passage at S (Fig. 2), (the cap V, of course, being screwed on where the hose is in the illustration (Fig. 2) shown to be connected for filling the tank).

Now, the capacity of the water-tank A (Figs. 1, 2, and 3) is described in the patent by the following words: "Between the heads E, E, which forms the interior of the vessel, or reservoir F, capacious enough to hold in this large engine five hogsheads of water,  
 2595 ale measure." The above quotation will be found about the middle of the fourth page of the written specification; at the bottom of the seventh page will be found the size of nozzle, or capacity of discharge, of this "large"-sized engine. "The holes perforated in this boss, or nozzle, must be of larger dimensions than those in the cullender of the suction-pipe W, to prevent the boss from choking with what passes through the engine when the water is dirty.

"About five-sixteenths of an inch diameter will be in  
 2596 general a proper size for a large engine."

The construction of the pump employed in this hand fire-engine is so clearly shown in the group of figures, or parts, under Fig. 6 of the illustrations, that I think it will not be necessary for me specially to describe it for the purposes of this answer.

It seems to me that the difference between the machine for spurting one stream of water five-sixteenths of an inch from a tank mounted on wheels, is a pretty good illustration of a relic of the mechanical art of the  
 2597 last century, or of the time and reign of the tyrant King George the Third, of Great Britain; but such a machine is hardly to be compared with the results in this department of art and mechanism in the last part of the nineteenth century, as found illustrated and described in the patent, complainant's Exhibit, C; to

wit, the steam fire-engine having for its main water-pump a suction and force piston-pump provided on the suction side with a vacuum-chamber, and branch or branches for suction-hose, and on its force side with an  
 2598 air and water pressure chamber, and one, two, three, four, or more, branches for connecting discharging hose.

Particularly when this machine is to be worked with great power and rapidity for the purpose of lifting and discharging vast quantities of water upon a fire, and with such force that were one of its several streams of discharge suddenly stopped off, the result might be the straining or bursting of leading hose, straining or breaking the force side or its connections of the main water-pump, or the steam-engine, or under certain  
 2599 conditions the flooding of the steam-boiler, or suddenly stopping the engine on its centre, and still more particularly there cannot be any just comparison between the relic illustrated and described in defendants' Exhibit, Duplicate Bramah, with the above described steam fire-engine, and the improvements and combinations therewith as found in the relief pipe, conduit, or water passageway, having a regulating valve convenient of operation by the engineer, whereby the water under excessive pressure in the force side of that pump  
 2600 may be allowed to pass from that side to the suction side of the same in such quantities as will afford the desired relief, by operating the valve, by raising it from or closing it on such water passageway, or conduit.

That is to say, in the first place, the defendants' Exhibit, Duplicate Bramah, is not a steam fire-engine. 2d, It has a different pump from that described in the Knibbs patent. 3d, It has no vacuum-chamber on the suction side. 4th, It has provision but for one line of hose. 5th, It is nothing more than an old hand-brake  
 2601 water-tank fire-engine. 6th, It has nothing analagous to the Knibbs improvement, as described and illustrated in the patent, complainant's Exhibit, C. 7th, The conditions in the employment of Duplicate Bramah are not such as to require said improvements. 8th, If it were possible in any way to connect or combine them with the pump illustrated and described by the Du-

2602 plicate Bramah patent, they could not be made to operate the same, nor produce the same result therewith, as that set out, illustrated, and claimed in the patent, complainant's Exhibit, C.

The parts and their purposes, the combination and operation, and the results of operation, are not the same in the English patent, Duplicate Bramah, as those found in the patent, complainant's Exhibit, C, therein illustrated, described, and claimed as the Knibbs invention.

Q. 53. State, by examining the drawing attached to the patent referred to in your last answer, the difference, if any, between the suction-hose W and the discharging hose P, without any reference to the size of the nozzle in discharging hose P.

A. They are both the same size.

Q. 54. I request your attention to Fig. 6 of the drawing attached to this same patent, and ask you to state from that, in connection with the written specification attached to it, whether the action of the pump found in Fig. 2 of the same drawings, is, or is not, semi-rotary or vibratory on a central shaft in connection with one or two valves constructed within the flanges upon either side of that central shaft, shown at that vertical part at the right of Fig. 6, marked near its top by the letter B, and then further state whether, in that same Fig. 6, the letter F does not represent a shell, or circular plate, surrounding the inner semi-rotary or vibratory parts on the shaft B; and, further, whether in that same figure the suction-chamber of that pump is, or is not, below the shaft B, and the discharging chamber immediately above that shaft, and both chambers within the cylinder F?

A. The pump, as I suppose could be easily understood by an examination of the different parts and their arrangement as found in the group of figures under Fig. 6, has a circular shell, or short cylinder, with flanges at each end, and is provided with a chamber G at its bottom, and a branch on to which the air-chamber with a hose and branch tank is fixed on the upper side of the cylinder; and that cylinder has a partition longitudinally in the line of its axis, permanently fixed,

which partition rises above the opening of the suction-chamber, dividing the same into two parts, and rising  
 2606 to the periphery of the pump and brake-shaft. This partition on its upper edge is provided with a slot for packing, and with a concave form which fits the outer circle of that shaft B. At the lower edge of this partition there are flanges, or hooks, C, C, for receiving the key E, in the group of drawings, which, being driven in, key-down the lower valve-plate on to which the valves over the suction-chamber G are secured. A rectangular plate is secured to the shaft, with the ends rounded to conform to the inner or concave circle, of  
 2607 the pump-cylinder; and the ends of the line of axis are square-edged, and all provided with packing. On either side of the axis of the shaft, in the wings or shafts, as the inventor terms them, of this broad plate, and on the upper side thereof, are valves opening upward, the same as those in the cylinder beneath them.

All these parts being in place, to wit, the partition having its top of concave form, and the same with its ends properly packed and the bottom firmly fixed in the cylinder, and at a line with its axis, and the lower  
 2608 valve-plates with their valves keyed down by means of the key and the hooks or flanges on either side of the partition, the shaft B having the wings or rectangular plate with a valve on either side of the shaft, being placed within the pump-cylinder, the valves being on the upper side and opening upward on the fans or wings of the cross-plate, which is securely fixed to the shaft B, the cylinder is slipped thereon, the lower side of the shaft B resting upon the concave top of the partition in the cylinder, the heads being secured with pack-  
 2609 ing and by means of bolts through the same and the flanges of the cylinder. The pump is located at the end of the tank, and the hand-levers are secured to the central shaft B, and operated by the handles P, P, in an up-and-down motion on either side of the tank. See Figs. 2 and 3. As the shaft is vibrated in its bearings in a section of a circle, back and forth, it will be seen that the valves alternately will draw and force, or open and close, on either side of the shaft and the par-

2610 tition, so as to suck in water from below, and force it out up above.

Q. 55. Having in your last answer described the suction-chamber of a pump in the patent under consideration as being below the shaft B, shown in Fig. 6 of the drawings, and the discharging chamber as being above that shaft, and both chambers being within the cylinder, or circular encasement, F, shown at that Fig. 6, I desire you to state whether you find shown in the drawings at that figure, or anywhere else, the improvements and invention described in the written specifications, and shown in the drawings, and stated in the claims of the Knibbs patent in suit, represented by complainant's Exhibit, C.

The same objection as above.

A. I do not.

Q. 56. Fearing that defendants' counsel may not clearly comprehend the age of this patent, I desire you to state from it about many years have passed since it was issued to the patentee.

A. Eighty-six years.

2612 Q. 57. I now hand to you defendants' Exhibit, Ward patent, December 10, 1878, J. A. S., Ex'r., Duplicate, which is, or purports to be, a certified copy of English letters-patent granted F. O. Ward, October 22, 1861, No. 2,638, for hydraulic presses, &c., certified by W. H. Doolittle, Acting Commissioner of Patents of the United States, under the seal of the Patent Office, and of the date of 22d December, 1879, and representing one of the patents about which defendants' expert, Mr. Elliot, gave evidence.

2613 I desire you to take this patent so represented by this certified copy, and again here examine it, and then state what, if any thing, you find described and claimed thereon or shown by the drawings, and further state whether you find described or illustrated on that patent the improvements and the invention described in the written specifications, and shown by the drawings, and embraced within and covered by the claims of the James Knibbs patent of the United States dated the 24th May, 1864, No. 42,920, and set out in the Bill in

2614 this cause, and being the letters-patent upon which the Bill of Complaint in this cause is founded or predicated, and which is represented by defendants' Exhibit, C, one of which is the original letters-patent of the date and number aforesaid, and the other a certified copy of it from the Patent Office of the United States; and, as in all other questions put to you on this rebuttal examination, I desire you to give your reasons fully and freely as to any statement you may make in answer to this question.

2615 To enable you to do that, you may, if you desire, refer to any model, exhibit, or paper, or written or printed evidence in this cause, on the table now before the examiner.

The same objection.

A. I have read the defendants' exhibit, Ward, patent duplicate, and think I understand pretty well what is set out therein. It is first a hydraulic press, being mounted on wheels and portable, and is sub-divided into quite a number of parts; and, furthermore, it is a  
 2616 system of pumps mounted with the engine to drive them on to a water-tank, as the foundation of the pumping mechanism. The force or plunger pump employed to work the hydraulic press may be seen in vertical central section at Fig. 8 of the drawings, A representing the pump cylinder with its packing and packing-box at *e, e, e, e, e, e,* and *b, b, b,* and C and D, the piston not being shown; *d* shows the inlet, or suction pipe, or water passageway, and *e* the inlet valve, and *f* a guard to prevent the valve rising too high or  
 2617 opening too widely; *i* represents the outlet waterway leading to the press, so that, in the ordinary reciprocation of the plunger of the pump, the water will be drawn in at *d* and passed out at *i*, for the purpose of operating or forcing the hydraulic press.

But suppose the desired pressure to be had on the hydraulic press, and that it was desirable to allow the pump to run on, draughting water through the inlet pipe *d*, the valve *g* being shut down, and the valve, or plug, E, being raised by the handle, or crank, K, at the  
 2618 end of the same, a water passageway would be opened

under the lower end of this plug, or valve, E, into the pipe s, and through that pipe returned again to the tank.

Figs. 6 and 7 represent a coupling together on each side of the water-tank two pumps of the character represented in Fig. 8, and as being operated by the engine B, mounted on the top of the tank, through the medium of the piston spindle-crank and fly-wheel, shaft and pinion-wheel and gear-wheel on a cross-shaft, with a crank and crank-pin on one end, and an eccentric stud on the gear-wheel of the other through the medium of two crank shafts, R, R', one at either side of the tank, coupled on to the pistons of the pump by cross-head and slides. See Figs. 6 and 7.

Now, while in this specification it is said, on p. 32 in the declaration of the invention pertaining to the above, and the purposes for which it is employed: "It is also obvious that the said improvements, so far as they relate to the grouping and construction of pumping apparatus, may be employed, not only on pumps used for hydraulic presses, but also on pumps used for other purposes, as, for example, in pumps used for extinguishing conflagrations, and in various sorts of feed-pumps and force-pumps required in different branches of manufacturing. In some such cases it may be convenient to use pistons instead of solid plungers, as above described, or double-acting instead of single-acting pumps."

Notwithstanding the above quotation, I have no hesitancy in saying that the pump herein illustrated and described is not the kind of pump in construction or operation as that to which Knibbs applied and combined his improvements. It is not a suction and force piston-pump having a vacuum-chamber and hose-branch connected with a suction-chamber on the suction side of the pump, nor has it a force-chamber with a water and air-pressure chamber, and one, two, three, four, or more, hose-branches on the force side of the pump, nor has it a conduit, opening, or water passageway, passing from the force to the suction side thereof, with a valve and means for operating the same to raise such valve

off of or close the same down upon said waterway, as desired, to regulate the flow of water under excessive pressure from the force or discharge chamber of the pump, back to and into the suction or receiving chamber of the same, for the purposes of the prevention of the bursting of the hose, the wasting of the water, or of damage from such water-waste, or the prevention of excessive strain upon the force side or connections thereof of the pump, or the same upon the engine or other power driving the pump, or the sudden stoppage of the engine, or under any conditions the prevention of the flooding of the boiler of the engine driving the said pump, in consequence of shutting off the water of one, two, or more, lines of hose, when the same is playing upon a fire.

That is to say, the pump described in defendants' Exhibit, Ward patent, Duplicate, is not such a construction of a pump as that described in the Knibbs patent, complainant's Exhibit, C; although it is mentioned as being capable of being employed as a fire-pump, it is not such a fire-pump as that described in complainant's Exhibit, C, and can hardly be said to be constructed for the same purpose. It certainly does not combine like parts, nor produce like results, nor does it operate the same. That is to say, it is not for the same purpose, it is not the same combination, it does not embody the same elements, it is not operated under the same conditions, it does not produce the same result, but is different substantially in all those respects, and materially unlike the Knibbs invention, as illustrated, described, and claimed in the patent, complainant's Exhibit, C.

Q. 58. This patent bearing date October 22, 1861, and while coming about two years later than the making of the Knibbs invention at the time he first began his experiments on the steam fire-engine "Arba Reade" in the city of Troy, which, according to the evidence already in this case was in April, 1860, yet I thought it best to submit it to you as I have done, in and by the last question to which you have given a full answer.



I still desire further to inquire, if, from your knowledge concerning the Knibbs invention and improvement, it would require forty-five pages, as in this exhibit, of closely written matter, to describe those improvements and invention of Mr. Knibbs, as applied by him to the main water force and suction and discharge pump of a steam fire-engine in April, 1860; 2627 and, as the evidence shows, experimented upon by him until some time in the latter part of the year 1862; and, further, I desire to inquire whether you found anywhere described in the patent in this suit, complainant's Exhibit, C, an hydraulic press; and I also desire to know, whether, in your judgment, you would recommend the city of New York to discontinue the use of the steam fire-engines now in use by that city in its fire-department, and which you say you have on several occasions examined, and substitute therefor this 2628 hydraulic press described in the exhibit mentioned in the last question, and illustrated by the several drawings of the patent attached to that exhibit; and, if you should answer yea, be pleased to give your reasons therefor.

A. I do not think it would take as many pages as mentioned in the question to describe the invention of Knibbs, on the steam fire-engine main water-pump. The patent, complainant's Exhibit C, does not describe a hydraulic press.

2629 I should not recommend the city of New York to substitute in place of the fire-engines now employed, the mechanism described in the defendants' Exhibit, Ward patent, Duplicate, for the purpose of putting out fires.

Q. 59. The defendants' expert, Mr. Elliot, in commenting upon complainant's patent in suit, Exhibit C, during his examination by defendants' counsel, took occasion to say much on the subject of "*verbiage*." Do you know whether Mr. Elliot had before him on 2630 that occasion this patent last above referred to, containing a very elaborate set of drawings, and only forty-five very closely written pages of description about hydraulic presses?

A. Yes, sir: he had.

Q. 60. I desire you to state whether, as soon as the answer in this cause was filed by defendants' counsel and printed by complainant's counsel, you were requested by complainant's counsel to take the answers so printed, and go to the Astor Library in this city, and there examine closely and carefully each and every of the French patents, and of the English patents, and of the American patents, set out as one of the defences in that answer.

To particularize, I will state the date and number of each of those patents to which I direct your special attention, as to whether you saw and examined each of the same in print at the Astor Library in this city, in the manner stated in the first part of this question.

2632 The French patents are as follows: namely, —  
 Of Provin, dated January 18, 1850, No. 5,219.  
 Of Letester, dated December 30, 1850, No. 6,324.  
 Of Frimot, dated April 21, 1835, vol. 36, p. 399 (1st series); plate 38, Fig. 2.  
 Of Lobry, dated October 30, 1854, No. 11,885.  
 Of Belleville, dated June 18, 1856, No. 16,941.  
 Of Benoit Duportail, dated June 12, 1857, No. 19,532.

2633 The English patents are as follows: namely, —  
 Of Bramah, No. 1,948, dated May 17, 1793.  
 Of W. Roberts, No. 2,430, dated September 2, 1862.  
 Of W. Wylam, No. 10,612, dated October 15, 1845.  
 Of F. O. Ward, No. 2,638, dated October 22, 1861.

The American patents are as follows: namely, —  
 Of Mason & Baldwin, dated December 2, 1829, No. 414.  
 Of G. Lindsay, dated March 10, 1857, No. 16,801.  
 2634 Of A. C. Twining, dated December 24, 1861, No. 34,018.  
 Of R. A. Wilder, dated March 27, 1860, No. 27,662.  
 Of Reuel Blackwood, dated June 25, 1861, No. 31,612.

Of Waters & Harnett, dated July 20, 1858, No. 20,-  
967.

And, if you answer yea, state whether, in pursuance  
of such request by complainant's counsel, you made a  
2635 thorough examination of the printed specifications, of  
the drawings, and of the claims of each of the patents  
named in this question.

You may answer this question as fully and freely as  
you deem best, in order to convey to the Court a clear  
understanding of this matter, as well also as to show  
to the Court the care and pains taken by you in pre-  
paring yourself upon these matters so as to give the  
facts as they really and substantially are, of all the  
matters involved in each of the several patents that I  
2636 have named in this question.

Defendants' counsel being absent at this late hour of  
the day, an adjournment until 10 o'clock A.M., to-  
morrow, December 27, 1879, will be had, at which time  
the defendants' counsel has the right to enter such ob-  
jections to this question as he may please.

Adjourned accordingly.

2637

NEW YORK, December 27, 1879.  
10 o'clock A.M.

Met pursuant to adjournment.

Present—Hon. Marcus P. Norton of counsel for  
complainant, and C. W. Betts, Esq., of counsel for de-  
fendant.

Samuel P. Kittle, Esq., proceeds with his answer to  
last question, and testifies as follows:—

A. Yes: nearly two years ago, I think, in February  
2638 or March, 1878, complainant's counsel gave me the  
bill and answer filed in this case, and requested me to  
make a thorough search, and inform myself at the  
Astor Library in regard to the French and English  
patents cited in the answer of the defendants, and also  
to inform myself upon the American patents as to what

said patents were for, and the mechanism illustrated and described in them, — to ascertain whether the invention, as illustrated, described, and claimed in the patent, complainant's Exhibit, C, was found or embodied in  
 2639 any, and, if in any, what ones referred to in the answer of the defendants.

Q. 61. State whether, in conformity to that request, you proceeded to make, and did make, the examinations requested of you by complainant's counsel with reference to those defences set up on the defendants' answer in this cause, and stated in my last question to you, and mentioned by you in your last answer; and, if you did, you may state what you think is necessary to show to the court, whether you made a thorough and  
 2640 exhaustive examination of those defences.

A. Yes: in pursuance to that request I visited the Astor Library from time to time, and took up the French patents in the order in which they are stated in the answer, and then the English patents in the same order, and then the American patents in the same order, and took notes at the time as to what was described, and as to whether the invention of Knibbs was embodied in them, as I proceeded with the examination. I spent a week or ten days (I don't remember  
 2641 now the exact number of days) in this examination, and made my examination, as I believe, thorough and complete.

Q. 62. State whether, during the examinations spoken of by you in your last answer, you found in any of those several patents to which you refer in your last answer, any description in any of the specifications, or illustrated in any of the drawings of any of those patents, or embraced within or covered by any claim or claims, the improvements and invention described in  
 2642 the written specifications, or shown in the drawings, or embraced in or covered by the claims of the Knibbs patent, upon which this suit is brought and being dated May 24, 1864, and No. 42,920, and represented by defendants' Exhibit, C, one being the original patent itself, and the other a certified copy of it from the United States Patent Office.

A. I did not; but defendants' Exhibit, Duplicate Roberts's provisional specification, which has no drawings attached, came nearer, as a word description, than  
 2643 any other thing that I found, and on which I have given testimony on this present examination.

Complainant's counsel states that he does not care at present to examine this witness any further, and that the witness is now ready to be cross-examined by defendants' counsel; but, before doing so, complainant's counsel inquires of defendants' counsel whether each and every and all of the exhibits which he relies upon as evidence of his defence in this cause is, or are, now upon the table in the presence of this examiner and of  
 2644 the witness; and if there be any one or more exhibits upon which defendants' counsel relies as a defence, and set out in the defendants' answer as a defence, that the same be now and here produced, so that complainant's counsel may examine this witness concerning the same in rebuttal thereof.

To any and all such exhibits, not now and here produced for that purpose, complainant's counsel not only here, but at the hearing, objects and protests against the same being presented to the Court, and being used as  
 2645 any part of the evidence in this cause.

Defendants' counsel states that all the patents on which he relies have already been put in evidence; and that those patents and printed publications mentioned in the answer, and which are not in evidence, and concerning which the defendants' expert, Mr. Elliot, was not examined, defendants' counsel does not now intend to present to the Court, or to rely upon at the trial; and defendants' counsel presumes that all exhibits to be used on the trial are now before the examiner, but that  
 2646 he has not examined the record to convince himself that none have been omitted, or retained by other examiners.

*Cross-examination of* SAMUEL P. KITTLE, Esq., *by* C. W. BETTS, Esq.

× Q. 63. Since your examination in this cause on October 25, 1878, have you continued your business of

manufacturer and sale of spiral spring and other mattresses, and other material?

2647     Objected to by complainant's counsel; 1st, As immaterial for any purposes of this suit; and, 2d, As it is none of the business of counsel, or of anybody whom he represents, whether the witness has, or has not, continued to do those things inquired of in the question; and, 3d, If defendants' counsel desires any evidence upon that subject, because his associate Mr. F. H. Betts has recently argued a cause in this court involving the very subject matter of the inquiry, this is neither the time nor place to obtain that information.

2648     A. My relation to that business is just the same as it was at that time.

× Q. 64. During that period, from October 25, 1878, until now, in how many cases besides the present one have you given testimony as expert?

The same objection as last above, and with further objection, that, while it may appear that the witness has not been employed as frequently and as extensively in patent causes during the period inquired about as has been the defendants' expert witness, Mr. Elliot, by  
2649 the firm of which examining counsel is a member, yet the evidence of the two experts is upon the record in this cause, and the Court will be very apt to judge from the evidence of the two, which is the most candid, straightforward, and reliable, in view of the whole case as presented to the Court in the evidence; therefore the question is incompetent, improper, and immaterial.

It is further objected to on the ground that the private affairs of the witness cannot rightfully be inquired into by examining counsel, as these proceedings are  
2650 neither criminal, nor are they supplementary after the return of an execution *nolle bene*, and for the information of examining counsel I would here state that this is a patent cause.

A. Three, I think. It may have been but two besides this one.

× Q. 65. How many times have you given testimony as an expert in patent cases involving improvements in steam fire-engines, in addition to the present?

A. No times. This is the only case of that kind  
2651 that I have given testimony in.

× Q. 66. How many times have you been examined  
as expert in patent cases involving steam-engines of  
any kind?

Objected to as immaterial, as it is fair to presume he  
has had as much experience in that business as defend-  
ants' expert witness, Elliot. The court can judge from  
the whole evidence as to the competency of the witness  
to testify in this cause, and a further objection that  
defendants' counsel exhausted that subject in cross-  
2652 examination of the witness, on the direct case, and  
therefore it is not cross-examination here.

A. I don't recall any cases at this time.

× Q. 67. Since you commenced to act as mechan-  
ical expert in patent cases in 1854 or 1855, in how  
many patent cases have you been examined as expert?

The same objection as last above.

A. I am unable to tell. I should say fifty.

× Q. 68. State as briefly as possible what you re-  
gard as the essential characteristics of the invention of  
2653 James Knibbs set forth in the letters-patent now in  
controversy, and name each part essential to the combi-  
nation, and the omission of any one of which, in a  
steam fire-engine, would prevent you from regarding  
such engine as an infringement of the patent.

A. I regard the main water-pump, to wit, a suction  
and force piston-pump, having a vacuum-chamber and  
a hose-branch and a suction-chamber in the suction  
side of that pump, and a force-chamber with water and  
air pressure-chamber and several hose-branches in the  
2654 force side. I regard the conduit, pipe, opening, or  
waterway, opening into the force chamber, or side, and  
into the suction chamber, or side, of such a pump, as  
essential; and a valve opening from and closing upon  
such waterway, with device or mechanism mechanically  
not unlike the spindle and handle for operating the  
valve, to regulate the amount of flow of water und  
excessive pressure in the force side, or chamber, back  
into the suction side, or chamber, this combination of  
parts being for the purpose of preventing excessive

2655 strain on the pump, or engine driving the same, and for the prevention of suddenly stopping the engine or flooding the boiler, as well as for the prevention of bursting the hose or the waste of water, and such damages as might arise from the result or doing of either of the things mentioned above as the things for which the waterway and valve specified are put upon the main water-pump, or combine with it, as stated above. That is to say, having that kind of a pump to be operated under the conditions and for the purposes  
 2656 stated, the combination therewith of a waterway, conduit, or opening, for the purposes stated, and the regulation of the flow of water from the force-chamber to the suction-chamber, by a regulating valve convenient of operation as stated, and in combination.

× Q. 69. Do you wish the Court to understand that a steam fire-engine in which any one of the parts mentioned in your last answer should be omitted, would not be an infringement of said patent?

2657 Objected to as being entirely for the Court to determine, upon comparing the evidence of the witness with the written specifications, drawings, and claims of the complainant's patent, on which his Bill of Complaint is founded. The question is therefore immaterial and incompetent and improper, and especially so on cross-examination.

A. I wish the Court to understand that I think the invention illustrated, described, and claimed in the patent, complainant's Exhibit, C, is what I have stated in the last answer; and I think that the parts, and the  
 2658 combination of parts, for the purposes specified are requisite for the most perfect development of the invention as described.

× Q. 70. Question repeated, and a direct answer, yes, or no, requested.

The same objections, and a further objection: the question has been already fully answered by the witness.

A. Yes: taking the fire-engine main water-pump as one part, and the water passageway, from the force  
 2659 to the suction chamber of the same, as another part,



and the relief valve as another part, all in combination for the purposes described in the patent, complainant's Exhibit, C, the same being operated in the manner and under the conditions therein stated, and producing the result specified.

× Q. 71. Is that the best and most direct answer that you can make to the question?

A. I think so.

2660 × Q. 72. Do you wish the Court to understand that the omission of any one of the parts specified in answer to × Q. 68, from a steam fire-engine containing all the other parts named in that answer, and operated in the manner and for the purposes described in that answer, would, in your opinion, prevent the engine in which such part was omitted from infringing said letters-patent?

A. I don't wish the Court to understand that I presume to determine the matter of infringement in any of my answers.

2661 I only state my opinion as to what constitutes the Knibbs invention, set out and claimed in the patent, complainant's Exhibit, C, and that the main water-pump therein found and improved is such a pump as I delineated in that answer as the pump on which Knibbs made the improvement, and to which he provided the water-passage leading from the pressure to the suction chamber of, and in which water-passage he located a valve to be operated to open or close that waterway, to regulate the pressure in the force side of that pump  
2662 by the degree of opening or closing the waterway by the valve therein for the purposes which he states, and that these parts are essential.

× Q. 73. Would a steam fire-engine used in the manner and for the purposes described in the answer to the × Q. 68, and containing all the parts set forth in that answer, except the vacuum-chamber in the suction side of the pump, contain the invention set forth and claimed in the letters-patent now in controversy? A direct answer, yes, or no, is requested.

2663 Objected to as being for the Court to determine, after having acquired a thorough knowledge and un-

derstanding of the letters-patent, complainant's Exhibit, C, referred to in the question, the whole matter resting upon the construction the Court may give to the patent referred to.

Complainant's counsel hopes that examining counsel will not forget the fact that he is putting the questions to *a witness*, and not to the Court.

2664 A. All but the vacuum-chamber, as found in the main water-pump described in the patent, complainant's Exhibit, C. I wish to call the attention of the counsel to the fact that the improvement is upon the main water-pump of a steam fire-engine.

× Q. 74. Substitute in × Q. 73 the words "would the main water-pump of a steam fire-engine" for the words "would a steam fire-engine," and then please answer the question.

The same objections as taken to the last above question are taken as objections to this question.

2665 The examiner's clerk reads the question with the words substituted as requested.

A. It would be different so far as the omission referred to in the question goes from the pump illustrated and described as the main water-pump in the patent, complainant's Exhibit, C. If all the other parts, however, were found substantially the same as therein described and illustrated, a liberal construction of the patent would regard the combination substantially the same, particularly if the working was not materially modified or changed thereby. But, strictly speaking, I think it would be a different construction.

2666 × Q. 75. Please to state definitely whether such a pump would, or would not, contain the invention set forth and claimed in said letters-patent.

A. I have given you my best answer as to that in my last answer.

2667 × Q. 76. Would the main water-pump of a steam fire-engine constructed and used in the manner and for the purposes described in your answer to × Q. 68, and containing all the parts set forth in that answer, except the air-chamber on the force side of the pump, contain the invention set forth and claimed in the letters-patent

now in controversy? A direct answer, yes, or no, is requested.

The same objections as last above; and if examining counsel insists, as an answer to his several questions, that they shall be entered "*yes*" or "*no*," that counsel is most respectfully referred to the answers of his expert witness, Mr. Elliot, during his cross-examination,  
2668 as a sample, or pattern, by which to go.

A. If you will allow me to explain, — no.

× Q. 77. Would the main water-pump of a steam fire-engine constructed and used in the manner and for the purposes described in your answer to × Q. 68, and containing all the parts set forth in that answer except "several hose-branches on the force side," and having but one hose branch on the force side, contain the invention set forth and claimed in said letters-patent?

A. If you will allow me to explain, — no.

2669 × Q. 78. Do you regard the "device, or mechanism, mechanically not unlike the spindle and handle," for operating the relief valve, and the position of such device, or mechanism, so that it will be "convenient of operation" for the engineer, as essential elements of the invention set forth in said letters-patent?

Objected to as immaterial and incompetent. It is for the Court to judge of that matter from his knowledge of the patent in suit, and from the whole evidence.

A. The same answer as last; and I will now take  
2670 the privilege of explaining the three last answers, fearing that I may be misunderstood. The main water-pump, particularly described by me in the answer to Q. 68, I think it was, to which frequent reference has been made in the subsequent questions, — I therein tried to state briefly and distinctly the characteristics, or parts, of the main water-pump, to which Knibbs applied his invention, or with which he combined it, and to which it was particularly applicable; and I wish to be understood, where the combination and the parts illustrated,  
2671 specified, and claimed, in the patent, complainant's Exhibit, C, are found in combination with such a main water-pump, being operated under the conditions and in the manner therein stated, and producing the results

explained, that there can be no question of the existence of the invention in such a construction.

And, as to the last two answers, I wish to state that I think the air and water force-chamber is an essential part of the main water steam fire-engine pump; that is to say, some sort of air and water pressure chamber

2672 is essential: and, as to the question in regard to the hose-branches, I can readily conceive how the construction, having but one discharge hose-branch, and being of a size sufficient to throw several streams, and the hose connected thereto being divided into several branches of hose, or having a hose nozzle of such a character as to change the size of the stream being played or thrown on to a fire, thereby producing the necessities and the operation and the advantages the same as would exist where there are several branches

2673 and lines of hose connected therewith for spurting several streams on to a fire at the same time, and subject to having one or more of them shut off at the same time. Indeed, I know of hose nozzles which are so made that the fireman running the same can and does very commonly so regulate the stream at the nozzle, as to reduce, by one-half, the amount discharged through the same, which would produce the same effect as the shutting off the stream from a separate line of hose; and in which case, to wit, reducing the number of

2674 branches to a single hose-branch in that main water-pump, it would be found just as necessary to have the relief-pipe and valve as where there were several hose-branches and hose playing water upon a fire, and where the pump, in such case, though it had but one branch, yet had this character of discharge, or any other analogous to it, would be the pump specified, and, when combined with the other parts, would embrace the invention set out in the patent, complainant's Exhibit, C.

2675 Now, as to the spindle and handle for operating the valve referred to in the last question, any mechanism, — as I understand the description in the patent, complainant's Exhibit, C, — that is not substantially different or difficult of operation, — so difficult as to be

practically inoperative, — for the purposes intended would be the same.

× Q. 79. With the limitations and explanations contained in your last answer, did you intend to answer the last question "No," as you had answered the  
2676 previous questions? or did you intend to answer it "Yes"?

A. I meant to state that such a main water-pump, with the devices as fully stated in my answer to Q. 68, or as modified in my last answer, — the invention would exist with such a main water-pump.

× Q. 80. Question repeated, and a direct answer requested.

A. My last answer is my best answer to the question.

2677 × Q. 81. In answer to × Q. 78, you speak of "the characteristics or parts of a main water-pump to which Knibbs applied his invention." I now ask you to state whether you regard the vacuum-chamber on the suction side of the main water-pump mentioned in your answer to × Q. 68, and the air-chamber on the force side of such engine, as essential to the proper working of "Knibbs's invention," or to the proper working of "the main water-pump" to which he applied it?

2678 Objected to by complainant's counsel, as incompetent and improper for the following reasons: The inventor Knibbs, in the letters-patent referred to, clearly and distinctly made known and pointed out the two chambers referred to in the question, which may be clearly and distinctly seen at A''' and B' of the drawings of his patent, No. 42,920, dated May 24, 1864; and, the inventor having so distinctly shown those devices, it is quite immaterial as to what the witness may think on that subject.

A. I think so.

2679 × Q. 82. To which do you consider it essential? The same objection as last above.

A. I think the vacuum and water and air chambers are essential parts of the main water-pump of a steam fire-engine, such as Knibbs improved by adding to it other parts to make its working more complete and

perfect, and that a main water-pump is essential to Knibbs's invention, as well as the waterway from the force to suction side of the same, with a valve to regulate the flow of water under excessive pressure in the  
 2680 force side of that pump to and into the suction-chamber of the same. In other words, the invention runs round like the water from the force to the suction side through the pump, and extends off in its operation or effect into the discharging hose and into the steam-engine driving said pump, as well as the suction hose containing the inflow of water.

× Q. 83. Look at the patent, complainant's Exhibit, C, and state which of the two claims contains the elements, or parts, set forth in your answer to the  
 2681 × Q. 68.

A. Both; the first being the operation of the parts, and the second the combination of the same. I do not wish to be understood as saying that these parts are specifically named, but I interpret the language of the claims as referring back to the construction and operation fully illustrated and described in the specification.

× Q. 84. Look at the drawings of Knibbs's patent in controversy, and point out by letter the parts referred to in your last answer, and named in answer to  
 2682 the × Q. 68; namely, —

“A suction and force piston-pump.”

“A vacuum-chamber.”

“A hose-branch.”

“A suction-chamber.”

“A force-chamber.”

“Air-pressure chamber.”

“Several hose-branches on force side.”

A. The letter A indicates the suction and force piston-pump. The side on which the suction-pipe B or  
 2683 suction-hose branch is located, is the suction side or suction-chamber of that pump, and B' is a vacuum-chamber. I refer to Fig. 3: and in Fig. 1 A''' represents, as I understand it, the water and air chamber of the force side, or chamber, the same being broken off; and the letter F, in Fig. 1 and Fig. 2, represents a hose-branch connected to the force or pressure side of the main wa-

ter-pump of a steam fire-engine. There is but one such branch shown in the drawings of the patent, complainant's Exhibit, C. I do not mean to state that the drawings or illustrations of that patent show a central vertical section, or lay open to view the piston and piston cylinder any more than it does the valve chambers, nor do I mean to state that it illustrates several hose-branches; but the drawings or illustrations taken in connection with the model, complainant's Exhibit, J, and the written description, clearly illustrates and describes the parts.

× Q. 85. Does the specification of the patent in controversy say any thing whatever about the part of drawing, Fig. 1, represented by the letter A'?

Objected to as immaterial, because, under the law and by the decisions of the Courts, the drawings in a patent are just as much a part of a description of the invention as the written description itself. The inquiry, therefore, is improper and incompetent, particularly so since the expert witness, Mr. Elliot, has already testified there is too much "*verbiage*" in that patent.

A. Not the written specification.

× Q. 86. Does the written specification say any thing whatever about an air-chamber on the force or pressure side of the pump?

Objected to for the same reasons and on the same grounds as stated in the objections taken to the last question, being upon a similar subject of inquiry.

A. I have not read the whole of the written specification with a view to ascertain definitely what it does say with regard to the air-chamber; but on the first page of the written specification I find, after the inventor has declared to what pumps his improvements are applied and belong, he states that "a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, which said drawings, make a part of this specification."

Then the description of the first figure: "Fig. 1 is a front view of the pump, and showing my invention and improvements hereafter described and set forth."

I do not find any other language of reference to an air-chamber than the above in the written specification.

2688 Neither do I find any written description at all of the valve-chambers of the pump, but I do not infer therefrom that there is no valve or valve-chambers.

× Q. 87. Do you find in the written specification any reference whatever to a vacuum-chamber on the suction side of the pump? If so, please point it out.

The same objections, and for the same reasons as stated against the last two questions.

A. "B' is an air-chamber." The above quotation will be found on the seventeenth line from the bottom of  
2689 next to the last page of the written specification. Any one knowing that air-chamber to be located on the suction side, and the pump connected to the hydrant by means of the suction-hose, and draughting with power more than equal to the head or water pressure of the hydrant, would have the effect of drawing the air from this air-chamber, and thereby making it a vacuum-chamber in some degree.

× Q. 88. What is indicated by the jagged line on top of A'''?

2690 A. The breaking-off of a pipe, or that that part extends farther when shown in completeness.

× Q. 89. Is there any thing in the written specification or in the drawings of this patent to show that the part broken off ought to be the air-chamber?

A. The written specification describes the main water-pump as a suction, force, and piston pump, and all such pumps have an air-pressure chamber. The drawing, Fig. 1, shows at A''' a rising vessel, or pipe, from the force or discharging side of the pump, as  
2691 opening out from the force-chamber of the same, and forming part of it, and I conceive that to illustrate a part of the air-vessel that is commonly used on this kind of a pump. If I am mistaken in that, I should be glad to be corrected. There certainly is an omission in the written description, except as far as I have before stated in regard to the description, or reference to the first figure.

× Q. 90. Is there any thing in the written descrip-



tion, or in the other figures of this patent, which prevents you from inferring that the pipe A''' leads to the other discharge-gates, similar to F, which we say are claimed in the two claims?

A. There is nothing to lead me to suppose that it does, and every thing to lead me to suppose that it does not. In the increased number of discharge-gates, or hose-branches, we would suppose they would all be alike, and connected alike to the force-chamber of the main pump, so far as their being hose-branches goes; and besides, for what purpose the tube, or pipe, A''', should be turned or bent up to a vertical line to be continued some distance above the top of the pump, if it were for connecting additional hose-branches, it would be very difficult to see, it seems to me. Furthermore, the vacuum-chamber on the opposite side, or suction-chamber of this main water-pump, is shown broken off in Fig. 1 in dotted lines, just above the suction hose-branch B, C, the same in both cases alike in Fig. 1 of the drawing. I don't think there is any reasonable doubt about what the bent-up pipe A''' is meant for, in view of the above facts. I refer in my last answer to the drawings in the original patent, and to illustration in the printed record.

× Q. 91. The certified copy of letters-patent marked "Complainant's Exhibit, C," which contains a photolithograph drawing of the devices described, and also the certified copy of said patent, marked "Defendants' Exhibit, Knibbs's patent, November 18, 1879," which contains a tracing-cloth copy of the drawing of said patent, do not either of them contain in Fig. 1 any representation in dotted lines, or otherwise, of the part B', which you have called a vacuum-chamber, and which is shown in dotted lines upon the engraving of Fig. 1 of complainant's patent, as printed in complainant's record, and also as shown in the colored drawing of the original patent now in evidence. Do they?

Objected to because the original patent itself is produced in evidence, which is the highest and the best evidence that can possibly be produced as to the letters-patent on which this suit is brought.

- 2696 2d, As to the changing of the public records in the Patent Office, and then issuing certificates or certified copies containing fraudulent changes, this could be better investigated by the examining counsel, and perhaps better understood were he to go back to the rule and reign of one M. D. Leggett, Commissioner of Patents, especially so when such men as T. J. W. Robertson, backed by his counsel, are found in the United States Patent Office, obtaining an extension of a patent which could not have been obtained until after the
- 2697 destruction of a public record that had life and existence in the Patent Office for a period of seventeen years thereto. It is therefore quite immaterial here to go into that subject, especially so when the original patent itself rises up to meet those who have made and certified to a fraudulent record.

Whether this change about which counsel inquires was made by M. D. Leggett, or T. J. W. Robertson, or his counsel, or somebody in his or their employ, will most undoubtedly remain one of the hidden mysteries

- 2698 of the present age.

A. They do not.

- × Q. 92. Look now at the drawing of Fig. 1 of the original patent, drawn in yellow, blue, and black, and which contains in dotted lines a representation of a part of what you call a vacuum-chamber; and after examining that figure, and, if necessary for comparison, the other figures of that drawing, state whether the upright lines formed of dots, representing the sides of that chamber, are not crooked and ragged and uneven, and evidently made without a ruler, and by an unskilful or careless draughtsman, while every other upright line in all drawings is made carefully, and with a ruler; and state also whether these dotted lines are not laid on over the other inks or ink in blue, yellow, and black, without any blank spaces being left for them, in the manner that blanks are left in the engraving made by the complainants and inserted in their record; and also whether those dots, as they cross the yellow lines, do not show clearly that they are made of
- 2699 different color yellow from that of which the other yellow lines are made.
- 2700

Objected to on the ground of being irrelevant, immaterial, and incompetent; there being no law in this country on the subject inquired about.

A. As to the first part of the question, the dotted lines representing the outline of the air-vessel or vacuum-chamber, as I have termed it, broken off above the main water-pump, as represented in Fig. 1 of the drawing referred to in the question, is not finely made. I  
 2701 cannot say, however, whether there was a rule or straight-edge used, or not, in making the upright lines. The dots are not absolutely in line, which might easily occur if a rule were used; as to the expertness of the draughtsman, I have seen better drawings, and many a great deal worse. The ink, I think, is the same color as the yellow ink used in all the figures in the original patent. I think the dots on the ink, showing the other parts of the drawing, is laid on after the darker colors were put on.

2702 X Q. 93. Look at complainant's Exhibit, J, which complainant's counsel has stated to be an exact duplicate of the model filed with the application for a patent now in controversy, except as to the two discharge-gates on the two sides of the gate to the bottom of which the relief pipe connects, and state whether that model or exhibit contains any thing which represents the air-chamber on the force side of the pump.

Objected to as immaterial whether it does, or does not, the matter inquired about being freely and fully  
 2703 illustrated and described in complainant's Exhibit, C, original patent, now in evidence in this cause.

A. It does not.

X Q. 94. Does the pipe which curves upward at the end of the square box, opposite to the end of which is the relief valve as the model exists as I hand it to you, represent the pipe leading up to a vacuum-chamber?

A. I so understand it.

2704 X Q. 95. Now, take that model, and set it so that the suction-chamber and relief valve shall appear upon the right, projecting from the main cylinder and single discharge-gate, which existed in the original model, pro-

jecting in the same way on the left-hand side of the main cylinder. The model being now in such a position that the relief pipe is as nearly as possible in the position shown in the drawing Fig. 1, and then, bringing the eye upon a level with the discharge-gate, state whether the curved pipe in the model, which you say leads up to the vacuum-chamber on the suction side of  
 2705 the pump, does not appear curving upward beyond the left-hand side of the cylinder and discharge-gate, and ending on a level with the top of the cylinder, just as the pipe A'', in the drawing Fig. 1, curves upward and projects beyond the left-hand side.

Objected to as immaterial and irrelevant whether it does, or does not, as the model itself will show to the court each and every part contained in it.

A. I have placed the model, complainant's Exhibit, J, in the position I am requested to: and the top of the  
 2706 bent pipe, that I have said represents the vacuum-chamber, does not rise as high as the top of the main water-pump; it stands off farther from the force side of that pump than the pipe represented by A'', running out from the force side and curving up to a vertical line, and being broken off.

Besides, A'' does not appear as coming out from behind the pump on its force side, but as being connected, somewhat inside of the extreme vertical line of the outer shell. Furthermore, that the matter being  
 2707 inquired about may be more clearly understood, I will state that the pipe representing the air-vessel, or vacuum-chamber, is screwed into the square suction, or hose branch, the same as the cap on the opposite end, and may be used on either end thereof. I will furthermore state that in Fig. 8 of the drawings, this air-vessel is represented as located on the suction-hose branch outside of the relief pipe and valve.

× Q. 96. At the end of the specification of the Knibbs patent are these words, "g is a valve to let  
 2708 water out at h." Do either of the claims contain the claim to this valve g, as a part of the mechanism of the pump to which the relief valve is connected?

A. I think not.

× Q. 97. Why is not this valve *g*, which is distinctly set forth in the specification, quite as much claimed in the claims of the patent as is the air-chamber, which you say A''' represents, and which is nowhere mentioned in the specification?

A. Because it has nothing to do with the successful  
2709 construction or operation of the pump specified, and because it performs no part of the relief sought or described in the patent, nor does it impart any of the advantages set out and described, or aid in the prevention of any of the harmful effects specified. It is for a different purpose incidentally advantageous for such other purpose.

× Q. 98. Which of the harmful effects specified does the air-chamber on the pressure or force side of the pump aid in preventing?

A. The sudden hammer-like stroke which is heard in  
2710 water-pipes where the water is suddenly stopped or let on, when and where the same is not provided with the elastic pressure of an atmospheric cushion. That is to say, without the air-pressure chamber, if the stream at the hose nozzle, one, two, or three, were suddenly shut off when playing, the effect would be sudden and more violent on the parts, like a blow, rather than like an elastic pressure. Furthermore, the flow of water from the nozzles in playing on to a fire would be irregu-  
2711 lar, and partake of the stroke of the piston in force. That is to say, it would spurt at unequal distances unless the elastic pressure afforded by the air-pressure chamber was had by some other or some similar means or device, and the same effect of irregular and uneven strain would be felt on the engine driving the pump.

× Q. 99. The relief valve described in Knibbs's patent, unless perhaps it be made automatic, has nothing to do, has it, with relieving this irregular flow of water, which would proceed from a piston-pump with-  
2712 out an air-chamber?

A. I think not, as I understand the question.

× Q. 100. Has the air-chamber on the force side any thing to do with preventing flooding of the boiler when one of the nozzles, or water-gates, is suddenly shut off?

A. It has the same to do with it that all the pressure part or force side of the pump has in contributing resistance, and forming part of the pressure-chamber.

2713 X Q. 101. Has this air-chamber any thing to do with preventing the flooding of the streets with water, which the relief valve, invented by Knibbs, prevented?

A. It has a great deal to do with the successful working of the pump. And I question whether the relief pipe, or waterway, and regulating valve, would be of very much advantage to a suction and force piston fire-engine pump, which did not have the air-pressure chamber. In this combination and operation it has to do with preventing the flooding of the streets, &c.

2714 X Q. 102. Do you mean to say that an engine containing all the parts described in answer to X Q. 68 would, through Knibbs's invention, prevent the waste of water and flooding of the streets, while with an engine having all the said parts except the air-chamber, there would be some waste of water and flooding of the streets?

A. I mean to say that a fire steam-engine drawing and forcing water through hose on a fire by the employment of a suction and force piston-pump, having air-chambers referred to, would be a vastly more perfect  
2715 and successful working-pump, than one not having air-chambers, and that the working of such a pump would be vastly improved by constructing or combining therewith the tube opening, or waterway, from the force-chamber to the suction-chamber of the same, and providing the said waterway with a relief valve for opening from or closing upon that waterway, convenient of operation, to regulate the flow of water under excessive pressure in the force-chamber back to and into the suction-chamber of the same pump. I mean that  
2716 the air-chamber adds to the successful working of the pump, and with the pump the parts referred to are combined. If the pump did not work successfully, it would hardly be likely to flood the streets much, unless there should be bursting and breaking for want of the relief the air-chamber would afford.

X Q. 103. Does the air-chamber do any thing else

but save the pump from strain, which would be caused by the blows of the piston, and cause the stream of water to flow regularly, and in an even stream? If so, 2717 what else does it do?

A. Yes: it affords a yielding resistance to the sudden stoppage of water to the hose, and transmits the same back to the engine through the medium of the other parts of the pump.

× Q. 104. By reason of its affording such yielding resistance when the hose, or water-gate, is suddenly shut off, is it not true that an engine which had no such air-chamber would have all the greater need for a relief valve, such as is described in the Knibbs patent?

2718 A. No: such a pump, in my opinion, would not be employed successfully on a steam fire-engine, if it would not; then it certainly would not require any improvement such as Knibbs's.

Adjourned to Monday, December 29, 1879, at 10 o'clock A.M.

NEW YORK, December 29, 1879.  
10 o'clock, A.M.

2719

Met pursuant to adjournment.

Present — Hon. Marcus P. Norton of counsel for complainant, and C. W. Betts, Esq., of counsel for defendant.

*Cross-Examination of SAMUEL P. KITTLE, Esq., continued by C. W. BETTS, Esq.*

× Q. 105. Why do you say, in answer to × Q. 104, 2720 "such a pump, in my opinion, would not be employed successfully"?

A. The reason in part is given in that answer to that question. I will further state the relief by hand would probably not be quick enough in the employment of such a pump to make the same of the highest or best advantage, or the most valuable.

I wish to be understood as giving it as my opinion,

that the improvements or invention of Knibbs is upon the kind of pump specified or described by me in many  
 2721 of my answers, and particularly illustrated, described, and claimed in the patent, complainant's Exhibit, C. These improvements are on a specified kind of pump, which pump has the vacuum-chamber, producing a yielding suction force, and the air-pressure chamber on the force side producing a yielding pressure on that side of the pump. Now, it seems to me clear that such a pump is adapted, with a given strength, to withstand a higher pressure than a similar pump would be, not having those air-vessels, because such a pump, if it  
 2722 could be operated successfully at all under the conditions described in the Knibbs patent, would be subject to those sudden blows of water, which are like hammer strokes; so that it is questionable whether it would bear one-half the excessive water strain, or pressure, that the pump which Mr. Knibbs improved would bear in practical operation, and that is the reason given in answer to the question referred to; to wit, that the pump would not be practical, and therefore would not require the improvements specified.

2723 I suppose the relief pipe and relief valve might be put on any pump. I suppose, too, that a draw-bridge may be put over a stream that is never navigated; but the invention of Knibbs is on a fire steam-engine, or other engine main water-pump, that is so constructed that it may be worked practically and successfully in draughting large amounts of water, and throwing the same through lines of hose, and other parts, upon fires for their extinguishment, the same being operated with great force and rapidity. And that improvement in  
 2724 that kind of pump for that purpose, is valuable.

Now, I do not know but what it may be found that Knibbs's improvement may be successfully operated under some other conditions, and proved valuable under such conditions.

× Q. 106. Is it not true that the greater the strain given to a pump by the sudden shutting off of a discharge of water, so much the greater is the need in that pump of Mr. Knibbs's relief valve?



A. It is true, the greater the *pressure* the greater  
 2725 the necessity for the relief; but it does not follow that  
 the strain will always be measured by the amount of  
 pressure. I think I have explained my view already on  
 that. But suppose, that, owing to what is known as  
 the hammer-stroke in a pipe or enclosed water-vessel,  
 by the action of water, where there is no air-vessel to  
 afford an elastic cushion, it is well known in such cases  
 that breakage, the bursting of pipes and parts of  
 mechanism, occur under a very much less pressure than  
 in cases where the elastic force is afforded.

2726 Besides, it must be remembered that the Knibbs  
 improvement is for other advantages over and above  
 the strain on the pump, or the pumping mechanism,—  
 it extends to the lines of hose and back to the mechan-  
 ism of the engine driving the pump, &c.

If the pump (being in all respects the same as that  
 described in the patent, complainant's Exhibit, C),  
 excepting the air-vessels, would be subject to over-strain  
 and breakage in any of its parts, at a pressure of one  
 hundred pounds to the square inch, and if the hose  
 2727 used in connection therewith was made to bear a strain  
 of one hundred and fifty pounds to the square inch, it  
 seems to me, then, it can be readily understood how a  
 relief of a character to save the pump from over-strain  
 under excessive pressure, could have no beneficial effect  
 in saving the hose, &c. I think I must be understood.

× Q. 107. As it is true that "the greater the pres-  
 sure, the greater the necessity for the relief;" and as it  
 is true that the air-chamber relieves a part of the pres-  
 sure caused by the sudden shutting off of the hose or  
 2728 water-gates, does not the presence of such an air-  
 chamber, in just the degree that it relieves that pres-  
 sure, detract from the efficiency or need of the Knibbs  
 relief?

A. I have not said, neither do I think, or wish to  
 be understood, or as saying, that the air-pressure cham-  
 ber relieves the pressure: I say that that feature of the  
 pump on which Knibbs made his improvement, or to  
 which he applied it, enabled the parts of the pump  
 to bear a greater strain, or more pressure, than would

2729 be the case were such a pump operated under like conditions without such an air-chamber.

× Q. 108. You do not wish to be understood, then, as assenting to that part of my last question which states "that the air-chamber relieves a part of the pressure caused by the sudden shutting off of the hose or water-gates."

A. No: I wish to be understood as giving it as my view that the air-chamber relieves the strain of the hammer-stroke of the water, rather than the pressure.

2730 × Q. 109. And that is all it does, is it?

A. No: as I have before stated, it adds to the steady, even flow of the streams being spurted upon a fire through the hose, and generally to the ease and regular working of all the parts, including the driving engine of the pump.

× Q. 110. Does it do any thing else?

A. I think my last answers cover substantially what it does. I don't think of any thing else now.

2731 × Q. 111. Then you wish the Court to understand, do you, that when the stream of water from the hose is suddenly shut off, this air-chamber has nothing to do with relieving the excessive pressure, or the strain caused by the pressure on the pump and hose?

A. No: I will state again that I made a distinction between pressure and strain, which would occur from the sudden shutting off of the hose, or flow of water, from the pressure-chamber of the pump; to wit, if there were no air-chamber, the sudden shutting off of the discharge of water from the pressure-chamber  
2732 would re-act, like a hammer-stroke, to strain or break away the parts, and that hammer-stroke would extend through the pump to the engine driving the same, like a shock, or sudden concussion, and bring every thing suddenly to a stand-still. There is no perceptible elasticity in water; the atmosphere is very elastic, therefore, by the introduction or the use of the air-chamber, the *strain* of the hammer-stroke is prevented, and the pump is worked on, instead of being suddenly stopped, and the pressure actually increased on the force side of  
2733 the pump in the employment of the air-vessel, or chambers.

× Q. 112. Now, in the pump without this air-chamber, all other things being equal, would there not be just as much need of Knibbs's relief valve to relieve the pressure caused by the sudden shutting off of the water from the pressure side?

A. I think not.

2734 × Q. 113. The extra strain on all parts of the pump and hose caused by the well-known hammer-like strokes where no air-chamber is employed would, then, in your opinion, prevent the necessity of having the Knibbs relief valve on the pump for use where the flow of water is suddenly shut off from the pressure side?

A. I think so substantially. Still, as I have said before, I don't know but there may be some conditions, or circumstances, or construction, where the Knibbs conduit and relief valve might be of advantage in a case like that suggested.

2735 × Q. 114. In order to obtain from you a clear and definite answer to this question, I put the proposition in this form:—

Suppose, while one of the steam fire-engines in use by the city of New York, and having all the parts detailed in your answer to × Q. 68, should, by the fall of material of a burning building, have a pin-hole or a minute aperture made in the top of the air-chamber, so that the air should escape and the air-chamber fill with water: if, under such circumstances, all the water-gates should remain open, the engine would continue working, would it not, although the flow of water would be irregular?

2736

A. I think the engine would continue working.

× Q. 115. Now, if one or more of the water-gates should suddenly be shut off, could not the Knibbs relief valve be used effectively to return the water under excessive pressure in the discharge side of the pump to the suction part of that pump?

A. In the last two questions the counsel is supposing (as I understand him) that the engine and pump are to be worked at the same rate of speed. This would not be the case where there is no air-cushion for the water under pressure, but, to the contrary, the

2737

sudden shutting off of the water, as is supposed, at the hose, would have to be met with a corresponding sudden raising of the valve for relief, and sufficient to return just the same amount as had been shut off at the hose, else the strain, breakage, or sudden stoppage, above explained by me, would occur.

2738 I know the elastic power of the steam-force driving, might, in some degree, compensate for the want of the air-chamber on the pressure side; but that would not be sufficient, in my opinion, to prevent the damage referred to.

I know of the automatic valve, complainant's Exhibit, K, and complainant's Exhibit, K 2, and I know that the spring contained in that valve, which is used on fire-engines of the city of New York, with few exceptions, might add other advantages to prevent the strain, breakage, and stoppages referred to by me. Nevertheless, I think a steam fire-engine would not be successfully or satisfactorily operated, with the defect spoken of in the question; to wit, not having an air-pressure chamber, or vessel, even by the employment of the Knibbs relief pipe and valve.

2739 × Q. 116. Would the steam fire-engine, operated under the conditions referred to in the last two questions, and in which the pipe, or aperture, connecting the suction with the discharge and the valve therein, were used to relieve the pressure caused by the sudden shutting off of the hose, — would this steam fire-engine, without an air-pressure chamber, contain the invention of James Knibbs, set forth in his letters-patent now in controversy?

2740 A. I think the main water-pump would be a different one from that illustrated and described in the patent, complainant's Exhibit, C, which makes a part of this combination, and, I think, an essential part. I don't know how the Court may look upon this. This answer goes, in my opinion, to the construction of the patent.

2741 × Q. 117. So far as your own opinion goes, the answer "No" would be a correct answer to the last question, would it not?

Complainant's counsel objects, and assigns as one of

the reasons therefor the answer of the witness to the last question; and with the further objection that it is no part of the province of this witness to undertake to give an opinion upon a matter that solely and only belongs to the Court to determine.

A. I think so; but I still adhere to the above qualifications given in my previous answers.

× Q. 118. Look at the model, complainant's Exhibit, J, and state whether, or not, in your opinion, that model contains the invention of James Knibbs, set forth in his letters-patent, now in controversy. I refer to your own opinion solely, and not to a construction which the Court may put upon the patent.

Objected to as immaterial and unimportant, unless the written specifications and the drawings attached thereto, and which the inventor Knibbs says therein  
2743 is a part of such written specifications, and unless, also, the claims attached to that patent, shall each and every be considered in connection with the Exhibit, Model, to which the attention of the witness is directed in the question. If that be done, no objections to the questions will be insisted on.

Complainant's counsel states that is not done, and that his question refers to the model alone.

A. As I understand the question, I am virtually asked whether that model contains an air-pressure  
2744 chamber of the main water-pump. It does not; but it does contain a conduit, or water-opening, or way, with a regulating valve, and I understand this model does contain hose-branches that are not found in the drawings of the patent, complainant's Exhibit, C, and it is deficient in other parts that are therein shown. That is to say, the model, in my opinion, does not contain or illustrate, in the best manner that it might, the invention of Knibbs. Were it to stand alone, there would have to be additions or improvements made before it  
2745 would become practically successful in its operation as illustrated, described, and claimed in the patent, complainant's Exhibit, C.

× Q. 119. Since you testified about that model at the last session, the model has been changed or altered,

has it not, by reversing the position of the screw-cap and the tube leading to the vacuum-chamber upon the opposite end of the square suction-box on the opposite side?

2746 Objected to as frivolous, immaterial, and as of no sort of consequence in any manner or form.

And complainant's counsel here notifies defendants' counsel that he may here, in the presence of the examiner, or down in his office, in the presence of Thomas J. W. Robertson, or in the presence of the Court, or anywhere else he pleases, turn that part in any position he pleases to suit himself; or he may get M. D. Leggett to write across it that it is a fraud of the first water; or he may carry it off, throw it amongst the sands of the sea, if he wishes, because complainant's counsel  
2747 has no sort of use for it in this cause, or in any other cause.

And complainant's counsel will cause to be made and filed in this court a good and sufficient bond that defendants' counsel shall not be indicted by a grand jury for having done so; nor shall he be falsified and vilified by the uttering and publishing of a wanton and malicious libel, known to be such by anybody who knows any thing about it.

2748 And, in the presence of the examiner's clerk, complainant's counsel takes the model, and turns that part referred to in the question in a reversed position from where it stood when the question was put, thereby making the opening of it to point downwards; in which position complainant's counsel has not the slightest objection of its remaining.

Complainant's counsel admits that there has another alteration taken place since this witness was examined, by the closing of the valve on the valve-seat; for which offence complainant's counsel begs that defendants' counsel will not procure an indictment by grand jury,  
2749 nor to submit the question to his client, T. J. W. Robertson, or to one M. D. Leggett, to *have them call it spurious.*

A. Yes. I changed it at the last session of this examination, to show you that it was convenient of

connection at either end of the square pipe; and, according to the drawings of the patent, it belongs to the same end of the relief valve.

× Q. 120. You changed it while the question was  
 2750 being written, and when you saw the drift of it in regard to a comparison of the model with the drawing; and, before the question was read to you, I changed it back, did I not, so that it remained as it had been, saying that I preferred to keep it so?

A. I don't remember of your saying that you preferred to keep it so. If that is so, I put it back now.

The witness proceeds to put it back on the other end.

× Q. 121. The rest of the matters contained in  
 my last answer are correctly stated, are they not?  
 2751 Complainant's counsel objects to the question as utterly void of "drift of it," and as utterly void of either point or sense; and therefore is entirely immaterial for any of the purposes involved in this suit, and as being more like the last effort of a drowning man to catch at a straw.

A. I really don't remember whether the counsel changed it back, or whether I changed it back myself. It was a matter that I paid very little attention to, further than, when I observed the drift of the question,  
 2752 the change occurred to me, and I made it for the purpose of informing counsel, as I have stated above.

× Q. 122. After that question was answered, and you made the comparison requested, did you then again place the tube curving upward to the vacuum-chamber upon the end nearest the relief-valve? If not, who did?

A. My impression is that I did.

× Q. 123. Now, recurring once more to the steam fire-engine having all its parts such as I described in  
 2753 × Q. 68, except that, while working at a fire, a minute aperture has been made in the top of the air-chamber, causing the same to fill with water, and expelling the air, I ask you now whether, or not, the use of the relief valve on that engine when the water-gate or gates were suddenly shut off, would, or would not, prevent the flooding of the streets with water, just as well as when the air-chamber was operative.

A. It would not. I don't know how minute an aperture you mean in the air-vessel.

- 2754 I think the sudden shutting off, under the conditions you mention, would be quite likely to be attended with breakage or bursting; in which case I think there would be some water flow into the streets. That, however, would depend upon the amount of excessive water-pressure in the force side of the pump, and the amount of steam-pressure being employed in driving the same. This I will say, that were the water at the hose nozzles suddenly shut off, unless the engineer or some one in charge had the relief valve in hand, and
- 2755 should instantaneously operate as I before described, the bad results referred to by me would undoubtedly follow.

- If I am asked, however, whether the gates in the hose-branches of the pump and the relief valve could not be so operated at one and the same time as to allow the pump to run on under steam-power, I will say that I think it is possible that it might, but not practically nor successfully for the purposes for which the improvements were made, and for the full advantages contemplated thereby.
- 2756

Q. 124. If the valve were opened in time, or if, upon a signal, it were open before the water-gates were closed, no more water would flow into the street than if the air-chambers were operative, would it?

- A. That's what I have stated above, substantially, as I understand the question; that is, supposing that there was a man specially to attend to that thing at both ends of the line: and to get rid of this, I understand to be one of the objects of the invention or improvement.
- 2757 Still, I do not wish to be understood as giving it as my opinion that such a steam fire-engine, virtually without an air-pressure chamber to the main water-pump, would be practicable.

× Q. 125. Did James Knibbs invent the air-pressure chamber of a steam fire-engine?

Objected to as immaterial, irrelevant, and incompetent whether he did, or did not.

A. I do not understand that he pretends to have done that.



2758     × Q. 126. Now look at the patentee, James Knibbs, in controversy herein, in which he says, at folio 101 of complainant's printed record, "One of the remaining discharge-pipes, with the hose-pipe disconnected, or else a waste-water valve, would have to be kept open during the operation of the pumps, so as to make the discharge of water the same in quantity as that received through and by means of the supply or suction part of the pump; for if the discharge be not the same, or nearly so, as that of the supply, the pump will  
2759 become somewhat strained and flooded, and would not, after a while, work or operate. The boiler would also become somewhat flooded, and the engine would cease to work. By the opening of the discharge-pipe, or waste-water valve, the discharge would become more equal to that of the supply; but here is a great waste of water, as well as the flooding of the street, where such engine is used."

I now ask you whether the opening of that discharge-pipe, or waste-water valve, in the engines used before  
2760 Knibbs's alleged invention, as described in his patent, did, or did not, as fully relieve the pump, as did the opening, tube, or water passageway, and the valve claimed by Knibbs in his letters-patent, and whether it did, or did not, as fully prevent the pump from being strained and flooded, and the boiler from being flooded.

Objected to as irrelevant, immaterial, and incompetent.

A. I think that a waste-water tube and valve would accomplish the relief substantially as stated in the  
2761 question. The object of the invention is very clearly stated in the patent, complainant's Exhibit, C, I think. As to the point of inquiry, I quote from the fourth page of the written specification, commencing at the fourth line from the top.

"The extra quantity of water thrown into the force or discharge part, or section, of the pump, from the suction or supply part, or section, and not discharged through the discharge or hose pipes connected therewith, because the same are closed, with one or more  
2762 exceptions, is conducted, by the means hereinafter de-

scribed, from the said force part, or section, of the said pump, back into the supply, or suction tube, or pipe connected to and with the said section, or supply part or section of the said pump; and thus the force or discharge part, or section, of the pump, is relieved from any excessive quantity of water, and the waste of water and the flooding of the street prevented, while at the same time the engine and the said pump perform all their respective functions in the most perfect and

2763 satisfactory manner, without hinderance or obstruction; and the said pump will throw *one, two, three, four,* or more, streams of water at the same time, the same being regulated by means of a valve hereinafter described and set forth."

Complainant's counsel at this point takes a further objection to the last question, and especially to that part of it which says, "This valve claimed by Knibbs in his letters-patent," because there is no such claim made in the patent, as counsel has stated in that ques-

2764 tion, as of itself alone and independent of other essential parts used in connection with it, in the manner and in the combinations for the purposes stated in that patent.

Q. 127. The waste-water valve described by Knibbs as in use on engines prior to the alleged invention by him of the device or devices claimed in his patent, successfully accomplished the following results did it not?—

It prevented the pump from becoming somewhat

2765 strained and flooded.

It prevented the boiler from becoming somewhat flooded.

It prevented the engine from ceasing to work by reason of excessive pressure in the discharge-chamber, and it allowed a steam fire-engine "constructed for the purpose of throwing one, two, three, four, or more, streams of water at one and the same stroke of the piston, to throw, but one, or two, or perhaps three, streams of water"?

2766 A. Yes.

× Q. 128. This waste-water valve and the device

or devices claimed in the patent in controversy both accomplished these results by the opening of a water passageway out of the discharge side of the pump, did they not?

A. Yes.

2767 × Q. 129. Then the invention of James Knibbs did not accomplish any thing whatever beyond what was as fully accomplished by the use of the waste-water valve, except the saving of water, and thus preventing the streets from being flooded?

A. It accomplished that, — the saving of water and preventing the streets from being flooded, and the damage of property thereby, over and above and in addition to the other things stated above, and more fully and clearly delineated in the patent, complainant's Exhibit, C; and he accomplished those things in a new way besides, and, I think, in a much more perfect and more complete manner.

2768 × Q. 130. Did the novelty of that way consist of any thing more than the saving of water while doing it, thus preventing the flooding of streets and damage of property?

A. Yes.

× Q. 131. What else that was entirely new with Mr. Knibbs, and leaving out of account the four particulars which the waste-valve accomplished?

2769 A. I think that if you or I, in our ordinary costume, had to regulate the valve to meet the various amounts of water being discharged through the hose-pipes by a steam fire-engine while standing in the paved streets of this or any other city, would discover that such regulation was attended with a thorough dousing, to say the least, of our feet and legs; which any time would be very desirable to get rid of, especially in very cold weather, particularly if we had to regulate that valve, as is stated to have been placed in a pipe, as I understand, which discharged water with sufficient force, not unfrequently, to tear up the pavements and  
2770 streets, as well as to flood cellars and fill the gutters.

Besides, as I understand it, when the pump and engine is properly constructed and worked, as improved

by Knibbs, it was perfect and convenient of operation and wholly within the pump, or constituted a part of the pump as much as any other part or attachment thereto, adding to the perfect working of the same.

× Q. 132. It was no more a part of the pump than the waste-valve, was it?

A. No.

2771 × Q. 133. All other things being equal, it would still be, in your opinion, the invention of James Knibbs, would it not, even though the handle, or spindle, or its equivalent, by which the valve was operated, was not at a convenient place, provided that it was at such a place that it could be reached; such as, for instance, at the side of the pump opposite where the engineer stands?

A. As long as the valve was practically operative for the purposes for which it was intended, it would be  
2772 the same.

× Q. 134. Then the novelty of the manner in which the devices described in the Knibbs patent accomplished those results, which had been accomplished by the waste-valve previously in use, consisted only in doing so as to save water, and thus prevent flooding the streets, wetting the operator, and destroying property?

A. Not quite that. The novelty, as I meant to be understood, consisted in doing all the things beneficial that had been before done on a steam fire-engine of  
2773 substantially the same character, and having a like suction force and piston-pump, a vacuum-chamber, and air-pressure chamber, a suction-hose branch, and discharge-hose branches, in a new and a different way, in addition thereto saving the waste of water and all damage or loss arising therefrom, and doing it in a convenient, practical, and successful manner.

× Q. 135. Where did you last see a rotary-pump in operation?

Objected to as immaterial and irrelevant; and it is no  
2774 matter whether he has ever seen one in operation, or not.

A. I cannot give the date; not a great while ago.

× Q. 136. Where was it?

A. At the fair of the American Institute in this city.

× Q. 137. What was it doing?

A. Pumping water.

× Q. 138. Where did you last see a rotary-pump steam fire-engine in operation?

2775 A. I wouldn't swear positively that I ever saw one. If I have, I can't remember one.

× Q. 139. Do you know any thing about the internal construction of them, except what you derived from the testimony in this case?

A. I know about the construction of rotary-pumps, which I have not derived from this case. But as regards the application of the rotary-pump to a steam fire-engine, that information has been wholly derived, as far as my recollection goes, distinctly in connection  
2776 with this case, as found in the exhibits and testimony, and such other inquiry and conversation as has arisen therewith.

× Q. 140. The flow of water from a rotary-pump, or from the discharge-gates of a rotary-pump steam fire-engine, has the same regularity or evenness as does the flow of water from the discharge-gates of a piston engine having an air-pressure chamber and a vacuum-chamber, does it not?

A. The throw of water from a rotary-pump is much  
2777 more even than that from a piston-pump. I suppose the air-pressure chamber on the piston-pump would equalize the regularity of the streams so that they would be substantially uniform, or nearly so.

× Q. 141. Do you gather from the testimony that the rotary steam fire-engine, "Eagle" No. 8, had any air-pressure chamber on the discharge side?

A. I gather from that testimony that the pressure or discharge chamber was at the far end of the carriage, or machine, — that is to say, on the front end of  
2778 the water-tank of that machine; and that that water-tank had a partition ten or twelve inches back of its front end, leaving an air and water tight chamber, into which the hose-branches with their water-gates were secured, and opposite which a water-pipe was secured

in the partition, or in an air or water tight manner, and that there might possibly have been a small air-chamber in that portion of the front end of the tank. There probably was at the start of that pump.

2779 × Q. 142. The water flows with such regularity from a rotary-pump, that nothing is needed but a very small air-chamber, is there, in order to give it a perfect evenness of flow?

A. I don't know as any air-chamber would be needed to give the water evenness of flow from a rotary-pump.

× Q. 143. Do you gather from the testimony that any part of the steam fire-engine "Eagle" No. 3, acted as a vacuum-chamber while the pump was in operation?

2780 Objected to. 1st, Because the evidence in this case is before the Court in the matter inquired about, and will show for itself. 2d, Because the evidence of defendants' own witnesses already shows that the air-chamber spoken of is no more nor no less than the chamber at the immediate front end of the water-tank of that engine, to which the discharging hose were attached, and that that chamber became entirely filled with water immediately during the operation of the engine.

2781 And, further, the exhibit of that engine filed by defendants' counsel, shows conclusively to this Court that that engine had neither vacuum nor air chamber; and such is the evidence on both sides in this cause as to that engine, and therefore it is incompetent to inquire of this witness about it.

Defendants' counsel objects to the prompting of the witness.

A. Not successfully as such.

2782 × Q. 144. If the chamber at the front end of the water-tank in "Eagle" No. 3 act as an air-pressure chamber, and if the part marked S in defendants' exhibit, "Eagle" No. 3, act as a vacuum-chamber at its end, opposite to the end at which you screw the suction-hose, would, then, the tube T shown in the photograph annexed to that exhibit, and containing the

plug-cock, and connecting the discharge with the suction parts of the pump, contain the invention of James Knibbs claimed in his letters-patent?

A. No.

2783 × Q. 145. Why not?

A. Because it would not be a combination of the parts. The parts have not the same purpose, would not operate in the same manner, and would not produce the same results.

× Q. 146. If, under the same conditions, the tube T connected a pressure-chamber in the end of the water-tank with the suction S, and if it were shown that this tube T and the valve in it were used for the same purposes as the tube G and regulating valve H  
2784 in complainant's patent, would it then contain the invention of James Knibbs?

A. No.

× Q. 147. Why not?

A. Because it would still be a different combination of parts. It would not be the kind of pump described as the one to which Knibbs added his improvements.

× Q. 148. What essential element would be lacking to that combination?

2785 Objected to as immaterial, incompetent, and irrelevant.

A. The pump would be essentially a different pump from the one to which Knibbs added his improvements.

× Q. 149. That is all, is it, referring to the pump itself?

The same objection.

A. It occurred to me that that was enough in my last answer. The combination was substantially a different combination. The pump being a different kind  
2786 of pump, and not having a vacuum-chamber, I think it is not necessary to go into minute details of difference farther. The operation, I will state, however, being entirely different, the conditions are greatly changed.

× Q. 150. So long as the water closed with regularity out of the discharge-gates on the force side of the pump, and closed with regularity into the suction-

side of the pump, and closed with regularity from the suction side into the force side of the pump when the plug-cock is opened in the tube T on "Eagle" No. 3,  
 2787 what difference would it make whether the pump between the suction and discharge was rotary or a piston pump, with vacuum and air chambers, in case the pressure to the square inch and the capability of resistance in the pressure-chamber in those two engines were equal, would not the invention of James Knibbs be contained in both?

Objected to as immaterial, irrelevant, and incompetent, because the evidence already in the case shows that the pipe and cock referred to in the question was  
 2788 constructed for the express purpose of obtaining a stream from the hydrant under hydrant pressure, it was never used or designed for any other expressed and sole purpose, and is no part of the invention of Knibbs.

A. If a man made an invention or an improvement on a locomotive, to enable him to drive the same regularly and at an even rate of speed, by the employment of brakes or otherwise, and that same improvement which he combined in the locomotive should be used on a sleigh, it would not make the sleigh a locomotive, nor  
 2789 the combination the same, because some man supposed, under certain and divers conditions, the improvement might be made applicable to a sleigh; no more, it seems to me, can it be said, after all the conditions are met suggested in the question, that the pump is made such a main water-pump as that described, as the one of peculiar construction and operation, and requiring, for the successful working of the same, the Knibbs combination therewith. Now leaving all the suppositions in the question, the main water-pump, or the rotary-pump, to wit,  
 2790 "Eagle" No. 3, is not the pump requiring the improvement of Knibbs. It is not the pump, Knibbs improvement. It is a leaky kind of a pump, and never could throw four streams successfully. Indeed, never more than two, though it was constructed to throw four; and all the suppositions or suppositious cases into which that pump enters as the main water-pump could not cure its faults, nor make the Knibbs improvement a neces-



sary part thereof. Neither will the invention ever be found in combination with that kind of a pump, according to my opinion and understanding of the illustration, specification, and claims of the patent, complainant's Exhibit, C.

× Q. 151. What is the difference between a piston and a plunger pump?

A. A piston-pump is a plate, or solid valve, working in a cylinder, or a head working in a cylinder in which it closely fits, and draws and discharges water each direction of its stroke through valves attached to other parts, like the piston of a steam-engine, and by means of a piston-rod.

A plunger-pump is a pump with a piston having a valve in its cylinder, or it may be a mandril plunger-pump, when about one-half the space of the cylinder is filled when the mandril is down.

× Q. 152. If the tube G and relief valve H, in complainant's patent, were placed upon a plunger-pump, all other parts being the same as described in the letters-patent, would this be the invention of James Knibbs set forth therein?

A. No.

× Q. 153. Why not?

A. Because it would be a different pump from the one described, and the one to which the invention is applicable as specified and claimed.

× Q. 154. Look at the drawings of the Knibbs patent, complainant's Exhibit, C, and state what there is therein that convinces you that the piston, which works in the cylinder A, has not in it the valve, and that the piston mentioned in the specification is not the piston of a plunger-pump?

A. There is nothing in the drawings taken separately.

× Q. 155. Is there any thing in the specification taken with the drawings which convinces you beyond doubt that the piston named therein is not the piston of a plunger-pump?

A. There is. I will refer to my answer to question on direct examination as the fullest answer to this ques-

tion, and to the patent on the first page whereof from  
 2795 which I quote. After the words, "Be it known," &c.,  
 the fourth line "useful improvements in pumps for  
 steam fire and other engine pumps." The first figure  
 description; also on the second page of the written de-  
 scription, the third line of the paragraph, "the force and  
 discharge part of said pump is connected to the suction  
 or supply part of said pump, so that one, two, three, or  
 more, discharge-pipes, or hose, may throw streams of  
 water at the same time and stroke of *the piston or*  
*operation of said pump.*" Half-way down the page I  
 2796 quote again: "Heretofore in steam fire-engine pumps,  
 constructed for the purpose of throwing *two, three, four,*  
 or more, streams of water at one and the same *stroke* of  
 the *piston*, there has been a great difficulty," &c.  
 Without going farther through the specifications, it is  
 clear enough to me that this pump illustrated and de-  
 scribed is a piston-pump, and not a plunger nor a rotary  
 pump. The emphasizing of the quotations is my own,  
 where they are not found in the written specification  
 from which I have quoted.

2797 × Q. 156. You say that it is essential that the  
 handle or spindle or its equivalent for working the  
 relief valve in pumps containing the Knibbs invention  
 shall be within convenient reach of the person operat-  
 ing the engine. I now ask you whether a relief valve  
 having no handle or spindle whatever by which any  
 one could open or close it, but which works entirely  
 automatically when the water was shut off by the hose-  
 man at the nozzle, and which valve operates by means  
 of a spring on the same, would contain the invention  
 2798 set forth in said letters-patent? I ask for your best  
 opinion, derived from your experience in the manu-  
 facture of spiral-spring and other mattresses.

A. I think it would.

Adjourned to Tuesday, December 30, 1879, at 10  
 o'clock A.M.

2799

NEW YORK, December 30, 1879.

Met pursuant to adjournment.

Present — Counsel as before.

Re-direct examination of the witness is here proceeded with by complainant's counsel, and he is asked the following questions: —

R. D. Q. 157. At X Q. 74, and other questions referred to therein, defendants' counsel asked you something concerning a vacuum-chamber as being attached to defendants' model of a piston-pump and its connections constructed after that that is on the steam-fire engine "Arba Reade," in the city of Troy. And you stated, if I remember correctly, that there was such a vacuum-chamber shown in the drawings of complainant's patent in suit, and you also stated that there was an air-chamber, also shown in the drawings of complainant's said patent, and that this vacuum-chamber and that this air-chamber belong to a main water piston suction and force pump of a steam fire-engine. I desire to know  
2800  
2801 whether you had reference to a main water-pump of the description shown by complainant's Exhibit, J, filed in this cause September 30, 1878, before the present examiner, as a piece of evidence in this cause?

A. I had.

R. D. Q. 158. State whether you have had that model exhibit apart, and now have it apart, so that you can see the piston-rod and the piston-head upon its end, and also the piston-chamber, and also the suction or supply chamber, and also the force or discharging chamber, the tube surrounding the piston-chamber, and also  
2802 whether you there see the valve-plate consisting of receiving and discharging valves, one at each end of the piston, suction, and force chambers, mentioned by me in this question.

A. Yes. I have it apart, and all those parts and chambers are easily to be seen as referred to and inquired about.

By taking the top or end of the cylinder, or shell, off, which exposes the valve-plate, and removing the same

2803 and the valve-chamber of the upper end, and by looking through either of the chambers, the lower valve-plate will be seen; and by looking down the piston-well, or cylinder, the opening into said chambers will be observed.

R. D. Q. 159. You may state whether, to a main water piston-pump of the description contained in the last question and answer, you found in that exhibit the improvements and invention described in the modern specifications shown in the drawing, and contained in 2804 the claims of complainant's patent in suit represented by Exhibit C.

Objected to as indefinite.

A. I do. I do not wish to be understood, however, as stating that the vacuum-chamber on the suction side or the air-pressure chamber on the force side, or that either of them, is fully represented in this model as they are illustrated in the original patent or the certified copy, complainant's Exhibit, C. A tube on the suction 2805 branch of this model represents in part the vacuum-chamber illustrated in Fig. 2 in full, in the patents referred to; and Fig. 1 represents the neck of the air-pressure chamber A''' broken off, which is not shown on the model.

R. D. Q. 160. But all the parts stated in the last two previous questions are shown in the complainant's patent in suit, are they not, which is represented by complainant's Exhibit, C?

A. They are.

R. D. Q. 161. I now desire to call your attention to 2806 the subject of water drawn into a pump of the description last above stated, and discharged therefrom under a force derived from steam-power. And I desire you to state whether such quantity of water that is drawn by the piston into the suction-chamber through receiving valves, and then transmitted by the reverse action of the piston through discharging valves into the water-pressure chamber, must, or must not, have outlet, or some means of escape from the force-chamber of the pump into which it has been transmitted under the 2807 conditions stated in this question. You may explain

the subject-matter of this inquiry as fully as you may deem best, in order that the Court may have a correct understanding as to what you say about it.

A. The water must have some means of escape if the piston-valves work. Suppose the hydrant connected by hose to the suction branch of a suction and force piston-pump, represented by complainant's Exhibit, J; and suppose the piston is at the top of the cylinder, or well, and the top valve-plate rests down  
 2808 upon the end of the partition in an air-tight manner, running vertically or parallel with the axis of the piston-cylinder and the pump-shell, and the outer head, or cover of the pump, to be secured in an air-tight manner over that valve-plate, leaving a valve-chamber between the head and valve-plate and the opposite end, being in the same condition, — the pump would then be in working order for draughting water; but, to facilitate and make more perfect the working, the vacuum-chamber should be attached on the suction side or chamber, and  
 2809 the air-pressure chamber on the force side or chamber. Now, suppose the piston to fit closely in an air-tight manner within the inner cylinder, or piston-well, and the piston to be thrust downward, the water-flow would follow the same through the suction hose and pipe into the suction-chamber, and thence by the valves on the suction side which open into the valve-chamber, thence down the piston-well, following the piston.

At the reverse motion, or stroke, a like draught, or suction-flow, would follow the opposite side of the piston in its upward stroke. The water that was drawn  
 2810 in by the downward stroke would be lifted and forced out of the piston-cylinder through the valves-chamber, through the valve-opening, and into the force or pressure chamber of this pump; and, at each successive stroke down and up, or forth and back, the same draught and flow of water, and force and discharge of water, through the valves, would take place; and, as the force-chamber filled, the water would rise in the air-vessel, or air-pressure chamber, until the air was compressed in force equal to the driving-power, or until  
 2811 the pump or the driving-power would give way.

And the effect on the opposite side of the pump would be to exhaust the air with a force equal to the driving-force, less the hydrant head or pressure, and thereby afford a suction power that would be elastic and regular.

Now, suppose several lines of leading hose attached to the force side or chamber, and the water-gates to be opened, and the hose pipes or nozzles playing on the  
 2812 fire, and the pump in full operation with great rapidity and power, at which time suddenly one, two, or more, of the streams of water being spurted on a fire were suddenly shut off, the inevitable result would be: 1st, the straining of the parts of the pump, or perhaps parts of the engine driving the same; or perhaps the stopping of the engine suddenly on its centre; or perhaps by the excessive water-pressure in the force side, or chamber, of the main water-pump, the valves of the boiler feed-pump would be forced inward against the  
 2813 steam-pressure, so that the water under excessive pressure in the force-chamber flowing therefrom through the feed-pipe would find vent through the feed-pump valves in the steam-generating boiler. (This last, however, would depend upon the relative pressure in the boiler to that found in the pressure-chamber in the force side of the main water-pump.)

Or perhaps, instead of either of the above, the leading hose from the pressure side would burst or give way.

2814 The pressure in the kind of main water-pump, operated under the conditions stated, would be very great; and the parts of the main water-pump would sustain much higher pressure, owing to the same being relieved from a hammer-stroke or water-blow not occurring on account of the air-pressure chamber and the elasticity of the atmosphere therein under water-pressure.

Now, to relieve the pump in its operation under the conditions stated above, there was formerly, as I understand, before Knibbs made his improvement for the  
 2815 purpose of relief, &c., a pipe secured into the force side of the main water-pump which opened into the atmosphere by means of a plug-cock or valve to relieve ex-

cessive pressure, and prevent evils, damages, losses, or breakages, referred to by me above, by wasting water with force equal to any excessive pressure, or indeed, any pressure had in the force side of this pump, operated under the conditions before stated.

And the waste of water was equal to the amount of the draught or suction, less that which was discharged  
 2816 through one or more hose nozzles, and that which was used to supply the steam-boiler, which not unfrequently, as I understand and believe, amounted to one-half of the water draughted by the pump.

This amount of water, being spurted or thrown with the above described great force, caused great damage (besides the waste of water) in tearing up the streets or pavements, in flooding the streets and sometimes the cellars of stores or buildings, in freezing up in very cold weather, &c.

2817 To relieve the parts of the pump and driving-power, to prevent the bursting of hose, to prevent the flooding of the boiler, to prevent the waste of water and its attendant damages, James Knibbs, as I understand his invention as illustrated in the model, J, in the drawings of the original and certified copy of the patent, complainant's Exhibit, C, and the words of description and claims therein found, made his invention and improvement as a combination with the pump above described by me, and fully and clearly set out and  
 2818 claimed in the model and drawings, specifications and claims of the patent, complainant's Exhibit, C, which consisted of a means of uniting the force and suction side of that steam fire-engine pump operated under the conditions specified above and described in the patent.

The Knibbs communication from the force to the suction side of the pump consisted of a pipe, waterway, opening, or conduit, which had a valve opening from, or closing upon, said waterway, the same being capable of convenient adjustment to regulate or relieve the  
 2819 force side of the pump from excessive pressure by returning, or allowing the water therein to return, back to and into the suction-chamber of the same; and the same to be combined and operated with the pump specified.

R. D. Q. 162. State whether there is, or is not, a greater pressure in a piston-pump of the description stated in the complainant's patent in suit, having an air-chamber on the force or discharging side thereof, than there would be were there no air-chamber connected to and communicating directly with such force and discharging chamber of the main water suction and force pump of a steam fire-engine.

A. The air-chamber makes the pump capable, as I have said before, of bearing a much higher pressure by relieving the force-chamber, or parts of the pump, from the liability of strain or breakage from the unyielding, sudden blow that is felt on the sudden stoppage of the outflow of water, or of the inflow of water that takes the stroke of the piston with it: without the air-chamber, it would be like sledge-hammer blows on all parts of the pressure or force chamber of the main water-pump, and so distributed to other parts; with the air-pressure chamber connecting with the water-force chamber, the above blows, or hammer-stroke, are received, so to speak, upon an elastic cushion; and the sudden excessive strain is avoided thereby, so that the force section, or chamber, may fairly be said to be capable (all things being equal) of bearing or sustaining a much higher pressure without danger of excessive strain or breakage, when the same is provided with an air-pressure chamber opening therein.

Unquestionably the necessity, in case of such a pump, was the cause of the adoption of the air-chamber; and undoubtedly with the air-chamber a much higher pressure would be used in the operation of the pump.

Indeed, I doubt whether the pump could be successfully used, the conditions being all the same, without the air-chamber: it certainly could not without any thing like the high pressure.

R. D. Q. 163. State whether there is, or is not, a greater or stronger vacuum on the suction side of this main water-pump under consideration. I mean a vacuum-chamber something like B', shown at Fig. 1 and Fig. 3 of the original patent, complainant's Exhibit,



C, about which you have testified, than there would be were there no vacuum-chamber therein connected with, and opening directly into, the suction or supply chamber.

2824 A. Yes.

R. D. Q. 164. State whether, the greater and the better the vacuum, the greater the quantity and the greater the rapidity of the draught of water into the suction chamber and through the piston-pump, when the pump is in operation under a given number of strokes per minute; and, in this connection, state whether, the greater the rapidity of the movement of the piston, the greater would be the quantity of water drawn, and therefore discharged in greater force, than would be

2825 the case were there no vacuum-chamber upon the suction or supplying side of a piston-pump under consideration. State fully about it.

A. The vacuum-chamber is of value in the draughting of water into the pump in the reverse direction to the air-pressure chamber. That is to say, it helps the lift of a suction, and is most valuable where water is drawn from depths below: however, it is valuable where hydrant connection is made, particularly where the inflow requires to be accelerated to increase the

2826 supply, as well as to prevent any thing like hammer-stroke on that side of the pump.

R. D. Q. 165. In a piston suction and force main water-pump for a steam fire-engine, made up of the following elements or devices; namely, —

1st, The piston-chamber centrally located;

2d, Suction or supply chamber attached to the piston-chamber;

3d, Force or discharging chamber attached to the piston-chamber;

2827 4th, Of receiving valves and discharging valves for passing water to the piston-chamber through the supply-chamber, and thence to the discharging chamber;

5th, Of a vacuum-chamber on the suction side as an adjunct to the suction-chamber;

6th, Of an air-chamber on the discharging side as an adjunct thereof;

7th, Of a branch or branches on the suction side, to supply the necessary water to the piston-chamber; and,

2828 8th, Of two, three, or more, branches on the discharging side so as to attach several lines of hose for the purpose of discharging water on a fire.

State your opinion, or views, as to whether there was, and is, a positive necessity for the Knibbs improvements and invention, consisting substantially, and I may say briefly, in the connecting of a force or discharging chamber with a suction or supply chamber of such main water piston-pump by means of a conduit, opening, or water passageway, and having therein arranged and so combined therewith a regulating valve, 2829 that it may be readily opened and closed in the same; or open from, and closed upon, a valve-seat in such conduit, opening, or waterway, and at such times as may be necessary, so as thereby to regulate the escape, or passage, of excessive water under excessive pressure in a piston-pump of the description stated in the first part of this question.

A. Undoubtedly the improvement of Knibbs was absolutely required, and of great value on a pump having the parts, or characteristics, enumerated in the question 2830 and for the purpose of spurting water upon a fire.

R. D. Q. 166. State whether, during the several times when, at the request of complainant's counsel, you examined defendants' steam fire-engines in use in the city of New York for the extinguishment of fires, in and by its fire-department bureau, to determine the question of infringement of complainant's patent in suit, of the date of May 24, 1864, No. 42,920, represented by complainant's Exhibit, C, you then and there saw steam fire-engines containing the several elements and devices described and mentioned in the last 2831 question, and referred to in your answer thereto.

A. I did. I there saw such engines.

R. D. Q. 167. State your opinion as to whether the shutting off of the flow of water by the closing of the nozzle while discharging water on a fire, the fact of the current having been stopped would, or would not, be made known to the engineer by means of the water-

pressure gauge located on the engine near the boiler, or other convenient place, or otherwise.

2832 A. It would. If the engineer was observing the water-gauge, he would see the pressure arising immediately; or, if he did not observe the indication of increased pressure in the force side of the pump, as indicated in the water-pressure gauge, he would have notice given him by the increased labor of the engine, which would indicate to him the necessity of regulating the relief valve, or opening the same to afford the necessary relief by allowing water to flow from the pressure to the suction chamber of the main water-pump.

R. D. Q. 168. Then this regulating valve may be opened by any suitable and convenient means, whereby to accomplish the result, not only briefly referred to in your last answer, but fully and particularly stated by you on this examination, may it not?

A. Yes: so long as the valve is capable of and does perform the functions, either automatically or by hand, it makes no difference.

R. D. Q. 169. During your cross-examination, defendants' counsel went into a good deal of hobnobbing and mismanaging about some fancied change or alterations of that model, that had silently, or otherwise, crept into his brain, that you had made during that examination in the model of complainant's Exhibit, J. I desire you to at this time make such arrangement of any of the parts of that model that will make them correspond to the drawings and description of complainant's patent in suit, Exhibit C, original patent, now before you. I have reference to that particular  
2834  
2835 part about which defendants' counsel seemed to have so much concern while cross-examining you. In other words, I desire you to take that part and place it in the model, where, from the description, you think it belongs, or should be. I know this is not material, and I only ask you to do this to get rid of the fuss and feathers of defendants' counsel.

A. I have done as requested. The part referred to, as I understand the question, is that which represents

the suction-chamber marked in the drawings, B'; and  
 2886 the change which I have made is simply to screw it on to the opposite end of the square box, like suction-branch of the pump, so that it stands out from the main pump; and the spindle and hand-wheel of the regulating valve there represented and located will be between the main pump or outer shell of the same, and the stem, or pipe, representing the vacuum-chamber, on the suction side of the pump.

2887

NEW YORK, December 31, 1879.

Met pursuant to adjournment.

Present — Counsel as before.

*Re-direct Examination of SAMUEL P. KITTLE, Esq.,  
 continued by Hon. MARCUS P. NORTON.*

Counsel for defendant reserves the right to object to all questions and answers, and also the right to cross-examine the witnesses.

2888

Counsel for complainant informs the gentleman on the other side, who appears here to-day as counsel for defendants, that this witness has been, and is now being, examined according to the rules established by this Court for the taking of testimony in causes pending in this court, as well as under the well-established rules for the taking of evidence in a cause.

Complainant's counsel, therefore, does not assent nor consent to any thing above stated on this record to-day by the gentleman who represents the defendants as  
 2889 defendants' counsel here to-day; and gives notice to him and the defendants, that, when this re-direct examination of this witness shall be completed, an opportunity will be given for a re-cross examination of the witness, which, if not improved or commenced within thirty minutes thereafter, complainant's counsel will close the examination of this witness, and the witness will be requested to sign this deposition, and the examiner to certify it in the usual form.

R. D. Q. 170. If I have understood you correctly

2840 during your rebuttal examination in this cause, you stated that you had examined in a thorough and satisfactory manner each and all of the defences set up in the defendants' answer in this cause, and that in like manner you had examined each and every of the pieces of evidence introduced into this cause by the defendants' counsel, which have been marked and filed by the examiner as "Defendants' Exhibits" in the manner requested by defendants' counsel. Am I correct in this understanding of your testimony upon the subject-matter of this inquiry?

A. Yes: that is correct.

R. D. Q. 171. You have spent, have you not, several days' time in making the examinations referred to in the last question, and also given to the subject-matter great care and attention in order to familiarize yourself with the subject-matter embraced in those defences and exhibits, that you might spread out upon this record, on a proper examination, the true facts and substance and method embraced in each of the same, have you not?

2842 You may answer this question as fully as you deem best.

A. I have been employed not only several days, but I believe several weeks, taking all the time devoted to informing myself in one way and the other in regard to the subject-matter in dispute and the various exhibits referred to in the question, as well as the testimony given by other witnesses in this cause, that I might give proper, intelligent, and truthful answers, and a judgment (where my opinion was called for)

2843 that would be clear and accurate.

R. D. Q. 172. I understand from the evidence that you have already given in this cause, during your examination in rebuttal of defendants' so-called evidence, that in neither one of the defences set out in the defendants' answer, or in any of their pieces of evidence filed and marked as their exhibits, as I have, in a previous question put to you this morning, stated, you have not been able to find therein contained the improvements and invention patented to Mr. James Knibbs on May

2844 24, 1864, No. 42,920, and described in the written spe-

cifications and shown in the drawings and embraced in and covered by the claims of that patent, the original of which is now in evidence and before you, and known as complainant's Exhibit, C. Am I correct in this understanding of your testimony, thus briefly stated? You may answer as fully this inquiry as you may deem to be appropriate.

A. Yes: you are correct in your understanding as stated in the question; and, as I have before stated, that, 2845 as a *word description* alone, defendants' Exhibit, Duplicate, Roberts's Provisional Protection, comes as near a word description of the invention, and, I think, nearer, than any other of the exhibits referred to.

R. D. Q. 173. State the date and the number of that exhibit to which you now refer.

A. September 2, 1862, No. 2,430.

R. D. Q. 174. Are there any drawings attached to that exhibit of any kind?

A. No.

2846 R. D. Q. 175. I desire to have an expression, or opinion, from you, founded upon the knowledge you have acquired in the manner you have stated to-day concerning the subject-matter involved in this suit, as to the real and substantial practical value, or usefulness, of the Knibbs invention, described in the written specifications shown by the drawings, and contained in the claims of the complainant's patent in suit, dated May 24, 1864, No. 42,920, and represented by the original patent, complainant's Exhibit, C; and, in answering 2847 this question, you may refer to any exhibit in the cause, if you shall desire, and answer as fully and give such reasons as you may think proper to justify you in the making of whatever answer you may make to this question.

A. I regard the improvement, or invention, as of a very great value, but have not the data whereby to fix the amount in dollars and cents. As to an individual steam fire-engine, such as is owned by the city of New York and employed in the extinguishment of fires, I 2848 think their practical value is nearly if not quite double that they would possess without the improvement,

or invention, of Knibbs. This I say in view of the explanations given in several of my answers in this record in which I have referred to the working of the main water-pump of a steam fire-engine, which did not combine the Knibbs invention.

R. D. Q. 176. In my last question, I did not desire or intend that you should estimate the value of the invention referred to in that question in dollars and cents.

2849 When I inquired as to value or usefulness, I did so with a view, if possible, to show to this Court that the complainant has founded his Bill of Complaint upon useful and valuable property, secured to him through the inventor, Knibbs, by the government deed forming a part of that patent, to which the written and the illustrating specifications are attached.

I understand you, by your last answer, to say substantially, that from all you have been able to gather through the extensive investigations which you say  
2850 you have made concerning that invention, not only among records and in the books, but also in the many steam fire-engines which you have examined, and in which you say you there found the improvements, and the invention to which I invited your attention in the last previous questions, is of great value, importance, and practical usefulness in the practical and successful operation of a main water piston suction and force pump of a steam fire-engine, for the extinguishment of fires in cities, villages, and such like. Am I correct in  
2851 this general understanding of your views, or opinion, on that subject?

A. That is my opinion: you are correct.

R. D. Q. 177. And that opinion is founded upon the knowledge of the subject which you have obtained in the manner stated by you on this examination, is it not?

A. It is.

Complainant's counsel here offers in evidence a photograph securely fastened to a card, which photograph  
2852 represents the steam fire-engine "Arba Reade," now at its engine-house on Third and State Street, in the city of Troy, N.Y., directly opposite St. Paul's church, and

near to the City Hall of the city of Troy, which I desire the examiner to mark "Complainant's Exhibit, 'Arba Reade,' J. A. S., Ex'r., December 31, 1879." It is so marked.

R. D. Q. 178. I now show to you the exhibit referred to in the offer last above made on the record, which is a photograph of the steam fire-engine "Arba Reade" in  
 2853 Troy, N.Y. Take it and examine it, if you please, and state whether you find there shown a vacuum-chamber, also an air-chamber; and, if you do, state their connections, if you can: and I also desire you to state whether you find on that photograph any thing shown, or any thing that represents the invention contained in plaintiff's patent in suit represented by the original patent known as complainant's Exhibit, C.

State fully about the matters of this inquiry, and in such way as shall best convey the facts, in your judgment, to the Court.  
 2854

A. I have examined the exhibit referred to, and find that the steam fire-engine, with a pump such as is represented in the patent shown as attached to the other parts of the steam fire-engine; to wit, the circular frame, the boiler, the fire-box, and tender, with a hydraulic and steam mechanism mounted on wheels.

The main water-pump being provided with suction and discharge hose branches, having also a vacuum-chamber mounted on the suction-branch, and an air-pressure chamber rising above the main framework on the pressure or force side of such main water-pump.  
 2855

Also a pipe, or conduit, or waterway, running from a discharging hose-branch back into the suction hose-branch, or square box, on to which the vacuum-chamber is mounted.

Behind the vacuum-chamber, and rising above the same, but nearly hid, may be seen what is probably the  
 2856 handle mounted on the spindle of the relief valve for operating the same by, and also the stuffing-box of the spindle.

Beneath the air-pressure chamber, and below the



tank-like framework, is found a curved box, or pipe, running down to and ending on the pressure side of the pump. This I suppose to be the neck of the air-pressure vessel, and which, I suppose, passes through the circular frame up to and into the bulb-shape air-pressure chamber, and which, I suppose, makes a part of it. The lower extremity of this pipe, where it unites  
 2857 with the force side of the main water-pump, would be fairly represented in Fig. 1 of the drawings of the original patent, complainant's Exhibit, C, lettered A," but other parts grouped around it are not shown in that figure.

R. D. Q. 179. State whether the drawings attached to the original patent, complainant's Exhibit, C, now before you, substantially show the several parts referred to by you in your last answer, and whether, so far as you can determine, they correspond with a main water  
 2858 piston suction and force pump, and its connections, shown in this photograph.

A. The parts shown in the drawing of the patent, Fig. 1, I think fairly represent corresponding parts found in the photograph "Arba Reade." There are more hose-branches, and there are other parts, shown on the main water-pump in the photograph, which are not shown in the drawings.

Complainant's counsel informs the defendants and their counsel present, that the re-direct examination of  
 2859 this witness is now complete, and the witness is here offered to the defendants and their counsel for re-cross-examination if desired.

The examiner is requested to note the time that this offer is made, 1.45 o'clock P.M.

At the hour of 2.45 o'clock P.M., no one appearing to re-cross-examine this witness, and one of defendants' counsel being present refuses to re-cross-examine the witness under these circumstances, complainant's counsel request the witness to sign his deposition, and that  
 2860 the examiner certify to it in the usual form.

Complainant's counsel will not object to a re-cross-examination of this witness, if done within a reasonable time, and at the expense of defendants or of their

counsel, and before the counsel shall leave the city for his home.

SAMUEL P. KITTLE.

Sworn to before me this December 31, 1879,

2861

JOHN A. SHIELDS,  
*Examiner, &c.*

NEW YORK, December 30, 1879.  
10 o'clock A.M.

Met pursuant to adjournment.

Present — Counsel as before.

2862 Richard H. Reillé, a witness produced on the part of the complainant, being duly sworn, deposes and says :

Q. 1. What is your name, age, residence, and occupation ?

A. Richard H. Reillé. I am forty years of age. I reside at 99 Perry Street, New York City ; and I am a mechanical draughtsman, and expert in patent causes.

Q. 2. You may state whether you ever resided in the city of Troy, county of Rensselaer, and State of New York ; and, if you have, when did you go there to reside, and about how long did you reside there ?

2863 A. I went there early in 1862, and resided there until late in 1873.

Q. 3. While there, did you know Marcus P. Norton of that city ? and, if you did, what was his business ?

A. I was well acquainted with Marcus P. Norton, and employed in his office for about seven years. He was practising as an attorney and counsellor-at-law in patent causes.

2864 Q. 4. You say in your last answer you were employed in the law-office of Marcus P. Norton of Troy, for about seven years. What were your general duties there ? and what opportunities, if any, did you have of becoming familiar with mechanical inventions, with letters-patent thereon, and with the preparation of patent causes for trial and hearing in the courts ? You may state as fully about these matters as you may deem best.

A. While in Mr. Norton's employ it was my duty to prepare all the drawings to be used in applications  
 2865 for letters-patent, and all the drawings necessary for exhibit in patent causes, to read over and compare specifications and all other papers connected therewith, especially as to whether they correctly described the inventions as represented by models and drawings, to make extracts from books and other records, to make drawings therefrom as exhibits, and to compare patents and to give opinions as to their affecting, in any manner, cases which we might have in hand. To render myself competent in this, I was compelled frequently  
 2866 to study up the state of the art relating to such cases in hand, and to frequently look up and study decisions of the Courts relating thereto. I have had in all, up to this present date, 1879, twenty-five years' experience and practice in drawing, about seventeen of which have been almost exclusively of the kind heretofore referred to.

Q. 5. Previous to this time, state whether you have been examined as an expert in any one or more suits, founded upon letters-patent upon mechanical inven-  
 2867 tions.

A. I have in several. I have been for several years practising as an expert, and am employed by manufacturers steadily as counsel in expert matters in their business.

Q. 6. I now show you the original letters-patent, granted upon the application of James Knibbs, and issued on the 24th May, 1864, No. 42,920, and for improvements in main water suction and force pumps for steam fire-engines. I desire you to take it and exam-  
 2868 ine it, and, if you know, state who made the drawings upon the tracing-cloth attached to that patent, and signed J. Knibbs.

A. I have examined the drawing in question, and fully identify it as one made by myself.

Q. 7. State when and where you made that drawing, as stated in the last question, and how you know that.

A. I made that drawing in Marcus P. Norton's

office in the city of Troy, early in April, 1864; and I  
 2869 find my own name at the bottom of it, which I swear  
 was written by myself, and at that time. I might add  
 that I also recognize it from many peculiarities in the  
 lettering, in the drawing, and from the signatures of  
 the witnesses, whom I know very well.

Q. 8. State whether that drawing was signed by  
 James Knibbs, and witnessed by Mr. Patterson and  
 Mr. McGregor in your presence and after you had per-  
 fected the drawing.

Objected to as the drawing does not correspond with  
 2870 certified copies of the patent now in evidence, which  
 are the best evidence of the condition of the drawing  
 at the time it was signed.

A. I am pretty certain that it was signed in my  
 presence, both by Knibbs and the witnesses.

Q. 9. State whether, before making the drawing  
 attached to the original patent now before you, you  
 made a drawing on drawing-board, previous to the  
 making of this drawing before you. You may explain  
 fully about that, and state the manner and process  
 2871 used by you in making this drawing upon this tracing-  
 linen attached to complainant's Exhibit, C, original  
 patent now before you, which you say was made by  
 you, and on which you say you wrote your name in  
 April, 1864, and which you say was signed by Knibbs,  
 and witnessed by the witnesses Patterson and McGre-  
 gor, at about that time.

Objected to as leading and incompetent as to the  
 previous drawing, that drawing not being produced.

The latter part also objected to as assuming that the  
 2872 drawing was signed in its present condition. It is dis-  
 proved by the certified copies, the same being a higher  
 class of evidence than that of the witness.

A. This drawing is a tracing made over a drawing  
 on paper, which was also made by myself, agreeable to  
 the practice at that time. The paper drawing was pre-  
 pared from a model, and from sketches made in the  
 "Arba Reade" steamer-house in the city of Troy.

Q. 10. State, if you know, what became of the  
 paper drawing referred to in your last answer.

2873 A. I believe it was sent to the United States Patent Office.

Q. 11. Sent there as a part of the application of Mr. Knibbs, for the obtaining of the patent now before you?

A. It was, agreeable to the practice at that time.

Q. 12. And the drawing that is now before you, attached to the original patent, was sent with the one on paper to the United States Patent Office, was it not?

2874 The same objection, if the question intended to elicit an answer stating or implying that the drawing was sent in its present condition, the same being disproved, as above stated.

A. It was.

Q. 13. Then, so far as you know, or have knowledge or information at this time, and unless that original drawing has been taken from the file of the Patent Office by M. D. Leggett or T. J. W. Robertson, or some one of his attorneys, or other similar persons, it is now among the files of the Patent Office; is it not?

2875 A. I fully believe it must be.

Q. 14. Now, unless some one or more of the persons named in the last question have in some way altered or changed that drawing since it left your hands as the draughtsman who prepared it, it is now in precisely the same condition as to the lines or marks by which were represented, originally, the devices on that drawing, is it not, in so far as you have any knowledge or information on that subject?

Objected to as leading and incompetent.

2876 A. The drawing on paper was originally, and should be at this date, an exact *fac simile* of the tracing, excepting such differences as would arise owing to the difference of material worked upon.

Answer objected to for the same reasons, and also because the certified copies are the best evidence of what the drawings in the Patent Office are.

Q. 15. Look at Fig. 1 of this original drawing attached to complainant's Exhibit, C, original patent, now before you, and state whether there is any line or  
2877 representation of any part shown in that figure, not

made by you at the time you made that drawing. In other words, look at it carefully, and see whether you discover there any change or any alteration in that figure, or any part of it, made by anybody else since you made it at the time you say you did.

The same objection, and also because complainant's counsel has not stated, nor does it appear that in putting the question he pointed out to the witness, the parts of the drawing which do not correspond with the  
2878 certified drawings.

A. I do not believe there is any.

Q. 16. Now look at the color of the ink, and particularly to that part represented in yellow, whether it be ink or any thing else, and state whether there is any difference in the various colors there used; namely, black, blue, and yellow.

A. The drawing was made in various colors, for the purpose of representing materials used in the construction upon the steamer "Arba Reade."

2879 Q. 17. What kind of material upon "The Arba Reade" is represented by the yellow?

A. It represents brass or copper.

Q. 18. Previous to your being sworn as a witness this morning in this cause, has complainant's counsel said any thing to you on the subject of the charge, or suspicion, by defendants' counsel now present, that there had been any change, or any alteration in any way, of those drawings now before you?

A. I never heard it before the questions were  
2880 asked.

Q. 19. And you say that you verily and truly believe from your examination of those drawings to-day, that the several parts represented by them are the same as originally made by you, and that you know of no change or alteration in them?

Objected to as leading and incompetent; the certified copies being the best evidence.

A. I know of none.

Q. 20. Now I direct your attention particularly to  
2881 the dotted lines directly over the opening, B, containing the regulating valve H, and broken off at the top,

as it appears above that part represented in blue, and state what that represents, if you know, and when those lines were put there, if you know, and by whom. And I also call your attention to dotted lines on the same figure, on pages 31 and 81 of complainant's record, and thereupon make such answer to this question as you may deem to be correct.

The same objections.

- 2882 A. The dotted lines referred to I made myself in April, 1864. I remember distinctly making them. I made them with a drawing-pen alone, not using a rule. I remember the fact quite well. Those lines represent the air-chamber B', at Fig. 3; as that part would, if shown full, have come before the valve, it was merely shown in dotted lines. The dotted lines in the cuts referred to in the record represent the same device. I remember that I was going to leave them off at the time, but Mr. Norton insisted that they should be put  
2883 in.

Q. 21. State whether B' of Fig. 3, is in part represented by the dotted lines as Fig. 1, referred to by you in your last answer.

The same objection.

A. It is.

Q. 22. What was, and is, represented by that part marked B', and on what side of the main water suction and force pump is it located?

The same objection.

- 2884 A. It represents the vacuum-chamber in the suction side of the pump.

Q. 23. What part is represented by A''' as Fig. 1, of those drawings, and on what side of the main water suction and force pump is it located?

The same objection.

A. It represents a part of the air-chamber on the force and discharging side of the pump.

Q. 24. What kind of pump did you represent by those drawings?

- 2885 The same objection.

A. A piston-pump.

Q. 25. State whether, in the making of those draw-

ings, you represented any special or particular main water-pump of a steam fire-engine; and, if so, what one?

The same objection.

A. I did. It was a steam fire-engine known as "The Arba Reade," in the city of Troy.

Q. 26. At the time you were making those drawings, did you consult the steam fire-engine "Arba Reade," as well as the model that went to the Patent Office, to enable you to make those drawings?

The same objection.

A. The drawings were made to correspond both with the model and the steamer "Arba Reade." My instructions were to give the steamer the preference, and to take from it such parts as would be necessary to illustrate the invention and the things, or the several parts, to which it was applied. I represented the various parts of the main water-pump in color, corresponding somewhat to the material of which they were composed, for the purpose of more clearly illustrating the full scope of the invention as applied to a steam fire-engine having a main water piston-pump.

Q. 27. State whether the model from which you made these drawings contained a main water suction force and piston pump, to which Mr. Knibbs had applied the invention represented by you in the original drawings attached to the original patent, and now before you and a part of it.

The same objection.

A. It did.

Adjourned to Wednesday, December 31, 1879, at ten o'clock A.M.

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NEW YORK, December 31, 1879.

10 o'clock A.M.

2889 Met pursuant to adjournment.

Present — Counsel as before.



*The Direct Examination of RICHARD H. REILLÉ, continued by Hon. MARCUS P. NORTON.*

Counsel for defendant reserves the right to object to all questions and answers, and also the right to cross-examine witnesses.

Q. 28. I now hand you complainant's photograph exhibit, "Arba Reade," referred to by Mr. Kittle in his  
2890 testimony to-day. I desire you to take it and examine it, and state what it is, what steam fire-engine it represents, if you know, and how it came into this cause as a piece of evidence, if you know, and state as fully about it as you may deem to be sufficient in order to a full answer to this question.

A. It is a photograph of the steamer "Arba Reade," of the city of Troy. It was given me by Mr. Norton at or about the time when the drawings were being made for letters-patent on Mr. Knibbs's invention,  
2891 which it fully represents. This photograph has been in my possession ever since, unknown to Mr. Norton, as far as I am able to know. During my examination yesterday, I recalled to mind my having it in my possession. I found it locked up in my desk; and I produced it this morning, believing that it might throw light on matters in suit now in progress.

Q. 29. Then, if I understand you, you have had that photograph of the steam fire-engine "Arba Reade," of the city of Troy, since the latter part of the year  
2892 1863, or the fore part of the year 1864. Is that it?

A. You are correct: I have.

Q. 30. You were somewhat familiar with that steam fire-engine at that time, were you not?

A. I was.

Q. 31. If you recollect, you may state who was the engineer of that steam fire-engine at that time.

A. James Knibbs.

Q. 32. Are you personally acquainted with James Knibbs? and, if you are, about how long have you thus  
2893 known him?

A. I am. I have known him about, I should say, sixteen years. I became acquainted with him in 1863.

Q. 83. State whether, during that time, and while you resided at the city of Troy, James Knibbs was the engineer of this steam fire-engine "Arba Reade," at Troy, N.Y.

A. I believe he was. I never knew of their having any other engineer. I was always accustomed to seeing him in charge of that engine.

2894 Q. 84. If you remember, you may state in what part of the city of Troy that fire-engine was located during the time you resided there.

A. It was always located in Third Street, near the corner of State, and directly opposite St. Paul's Church.

Q. 85. Now, recurring to the photographic exhibit, "Arba Reade," now before you, state, if you remember, for what purpose that photograph was first handed to you, at about the time you have stated.

2895 A. Well, I believe it was entirely with regard to the making of the drawings, on application for letters-patent on the invention of Mr. Knibbs.

Q. 86. In as far as the vacuum-chamber in suction side of the main water piston-pump of that engine, and of the air-chamber in the pressure or discharging side of that same pump, or the external appearance and arrangements are concerned, how do the drawings of the original patent, complainant's Exhibit, C, compare in those respects, or in any other respect that you may desire to state?

2896 Objected to as incompetent.

A. The photograph in question is an accurate life-like representation of the steamer "Arba Reade," as constructed at that time, showing the relative positions of the vacuum-chamber and the air-chamber of the main water piston-pump, and of the exterior parts of Mr. Knibbs's invention. The drawing contained in the original patent in suit is a tracing made over a paper drawing which was made from sketches taken from the steamer, and corresponds with the steamer, as

2897 at that time, and also with the photographic representation thereof.

The drawings were made in color, so that the materials of which the different parts were composed might

be understood; and in making the drawings I only showed the parts adjacent, or about the invention of Mr. Knibbs, sufficient to illustrate the connection. I showed the vacuum-chamber of the suction part fully in Fig. 3, in dotted lines only in Fig. 1, and I also showed but a part of the connection of pump with the  
 2898 air-chamber on the discharging side which is marked A''' in Fig. 1, which letter was placed thereon by myself at the time I made said drawing. I did not deem it necessary at that time to show any more of the air-chamber on the discharge side, and to have drawn it in full would have made the drawing very large; while, to have shown the vacuum-chamber on the suction side by drawing it complete on Fig. 1, would also have necessitated the complete hiding of the regulating valve-handle of the Knibbs waterway, which I desired  
 2899 to show very clearly, and I considered the said vacuum-chamber sufficiently shown in Fig. 3.

Q. 37. I desire you to state how it was you came to make the *dotted lines* in Fig. 1, if you remember; and you may also state what the draughtsman means in the use of dotted lines in any part that he is draughting.

A. In Fig. 1 the suction inlet is shown in section, that the valve may be plainly illustrated. The section is supposed to be taken immediately back of the vacuum-chamber, between it and the valve of the  
 2900 Knibbs waterway looking towards the pump. The vacuum-chamber, therefore, would be this side of the plane of the section; and it would be improper, therefore, to have shown it in full, as it would not have appeared in such a view. I stated this to Mr. Norton at the time, but Mr. Norton insisted upon it that there should be something shown to indicate its position. I told him that it was the custom with draughtsmen to illustrate in similar cases by dotted lines. He assented thereto; and I made those dotted lines at that time, as  
 2901 I have hereinbefore stated, by a drawing-pen without a rule, perhaps rather hastily, as Mr. Norton was desirous of having it on before the papers were signed. There has been no alteration in said drawings, as far as I can detect, since that drawing was signed by James Knibbs and the witnesses thereto.

Q. 38. State, if you remember, whether the preparation of the application for Mr. Knibbs's patent now before you, complainant's original patent, Exhibit, C, was, or was not, for some considerable time pending in  
 2902 Norton's office before it was completed and transmitted to the Patent Office. State as fully as you remember about that.

A. I believe it was in the office at least several months, I should say full three months, being delayed somewhat by press of business in that office.

Q. 39. If you know, you may state who made the model that was sent to the Patent Office, on the application of Mr. Knibbs for the obtaining of this patent.

A. I believe they were both made by Cyrus A.  
 2903 Sherwood.

Q. 40. What do you mean by "*both*," as used by you in your last answer?

A. I mean that they were two models, which were duplicates.

Q. 41. One of which went to the Patent Office in the application, as you have stated; and the other, — where is that, if you know?

A. Well, I believe it is this one before me, which I have now in my hand, and which is marked "Com-  
 2904 plainant's Exhibit, J, September 30, 1878, J. A. S., Ex'r."

Q. 42. Judging from your last answer, I suppose you have seen that model to which you referred in your last answer before this examination. If you ever did, state where you first saw it, and when, if you remember.

A. I remember this model quite well. I saw it in Marcus P. Norton's office, in January, 1864; and from that at least during five years after, or all the time that  
 2905 I was in Mr. Norton's employ, this model was in the office, and frequently handled by me.

Q. 43. While you were connected with Norton's office, as you have stated, you had a room assigned you for your special work of examining models, and examining exhibits of inventions, and for the making such drawings of mechanical inventions, or of models, or of

machinery and places for retaining that class of work under your supervision, as well as for retaining such models as were in the custody of that office, did you not?  
2906 not?

A. Yes, I did. There was a case in that room in which models were kept. This particular model I often had out to show to my friends.

Q. 44. And you are now enabled to identify that model, and the one you have referred to, are you not?

A. I do fully identify it as the one.

Q. 45. In what respect, if any, does this model, complainant's Exhibit, J, differ, if you know, with that that was sent to the Patent Office in the application  
2907 for a patent by Mr. James Knibbs, upon the invention you have referred to in your examination?

A. It has two extra outlets for attaching hose-pipes to the discharge side of the pump. In all other parts it is as it was then, and as the duplicate is, or should be.

Q. 46. The valve-chambers at each end of the piston-chamber, and the receiving and discharging valves located therein, and the suction-chamber, and the force-chamber surrounding the piston-chamber, were  
2908 each and all the same in the model that went to the Patent Office in the application for the patent, as are those corresponding parts in the model now before you, complainant's Exhibit, J, were they not?

A. I believe they were complete and perfect duplicates.

Q. 47. State whether, at the time you had the application for the Knibbs patent in hand, in your room, preparing the necessary drawings to illustrate Knibbs's invention, and its combinations with the main water  
2909 piston-pump you have described, you examined any other steam fire-engines in the city of Troy with a view of getting a thorough knowledge of Mr. Knibbs's invention and its application to steam fire-engines, and, if you did, state what engine, if you remember, and the time as near as you remember.

A. Mr. Norton told me to go to the steamer "Osgood," located on Adams Street, corner of Second Street,

and examine it. I went there, but for some cause I did not have an opportunity for such a complete examination as I did have at the house of "The Arba Reade." I believe there was no one present to open it for me. I would not take the responsibility myself.

While at the "Arba Reade" house, Mr. Knibbs himself was present, and gave me every opportunity and the fullest explanation. This was during the winter of 1868 and 1864. I think it was rather before summer in 1868.

Adjourned to Friday, January 2, 1880, at 10.30, A.M., after which Mr. Hoyt, representative of Betts, Atterbury, & Betts, present at the examination to-day, reserves for defendants' counsel the right to object to any and all the questions and answers of to-day's examination. Also the right to re-cross or cross-examine any witness, as before stated, Mr. Betts being necessarily absent from town, and so unable to be personally present.

To which complainant's counsel does not consent, but, on the contrary, objects to each and every thereof.

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NEW YORK, January 2, 1880.  
10.30, A.M.

Met pursuant to adjournment.

Present — Hon. Marcus P. Norton of counsel for complainant, and C. W. Betts, Esq., of counsel for defendants.

2913

*Direct Examination of the Witness, RICHARD H. REILLÉ, Esq., continued by Hon. MARCUS P. NORTON.*

Q. 48. You have said something about your going to the engine-house of the steam fire-engine "J. C. Osgood" in Troy, N.Y., about the time you began the preparation of the drawings whereby to obtain the patent on the Knibbs invention in this suit, and which is now before you.

You may state whether Mr. James Knibbs had, or  
 2914 had not, promised to meet you at that engine-house, and  
 to show to you the inner parts of the main water suc-  
 tion and force pump of that engine.

A. That was the understanding, and the time was  
 set. I went to the "Osgood" steamer-house, and waited  
 a full hour for Mr. Knibbs, and he did not make his  
 appearance.

Q. 49. Owing to Mr. Knibbs not meeting you at  
 the time designated by him, I understand you to say  
 that you could not, or did not, see *the internal* construc-  
 2915 tion of the main water piston-pump of that engine.  
 You may state, as near as you remember, what, if any  
 thing, you did see externally attached to that main  
 water piston-pump; and, in answering the question, if  
 you wish, you may refer to any model or other exhibit  
 now on the table before the examiner.

A. At the time I was there, after I found Mr. Knibbs  
 had not come, I asked for Mr. Collins, the engineer of  
 the steamer; but he was out also, and there was no one  
 there, either capable or having authority to open it in  
 2916 any manner to let me see the interior, or to explain it.  
 I had therefore to content myself with a look at the  
 outside only. What I saw of this invention was the  
 exterior parts of the valve passing into the main water  
 piston-pump of the engine, as in complainant's Exhibit,  
 M, here before me.

*Cross-examined by C. W. BETTS, Esq.*

× Q. 50. How long ago did you cease to be em-  
 ployed by the complainant's counsel, Mr. Norton?

2917 A. I think the last piece of work I did for him was  
 in 1871, or early in 1872. I think 1871.

× Q. 51. What year did you cease to be employed  
 in his office?

A. I think it was in 1870. I was employed after  
 that; but I won't be positive that it was in his office,—  
 in his room which had been his office before.

× Q. 52. About how much work did you do for  
 Mr. Norton, in making drawings for patents?

Objected to as immaterial, and as matter that the

2918 city of New York or its counsel has no concern in whatever.

A. I was for about seven years constantly employed by him, sometimes very frequently to a late hour at night.

× Q. 53. And about how many patents did you make the drawings of?

The same objection.

A. Well, that question I could scarcely answer now. I would have to look the matter up a little before I could reply properly. My time was taken up also, considerably, in making drawings for exhibits in suits.

× Q. 54. The drawings of the patents which you drew were so few in number that you have forgotten all about them: is that it?

A. Rather the other way. Mr. Norton's business was rather extensive. I made no drawings for him that I could not instantly recognize if I had them before me. My own marks are on them.

2920 × Q. 55. Do you remember drawing them as well as you say you remember drawing the tracing attached to complainant's Exhibit, C, and the drawing at Washington, of which you say that tracing is a copy?

A. If a drawing were placed before me which had been made by me during those years, I not only could identify the drawing, but could instantly recall to mind incidents connected therewith, and very probably conversations also.

2921 × Q. 56. But if a drawing is not placed before you, is your memory sufficient to enable you to say just what parts that drawing contain, and whether it did, or did not, have certain features?

Objected to, as there is no pretence on the part of the witness during this examination that he has any recollection of the kind indicated by the question, his whole testimony about the drawings having been rendered with the original patent granted to Mr. Knibbs before it.

2922 Defendants' counsel protests against this interference with the cross-examination, and requests that the wit-



ness be allowed to make his answers without information being conveyed to him under cover of objections.

A. I have, I believe, an excellent memory; but, if a drawing were not before me, I would not be willing to swear as positive as I would if it were, simply for the reason that I prefer being cautious. I have no desire to tell a lie on the witness-stand.

2923 X Q. 57. Then, as to the drawing in Washington, of which the drawing annexed to complainant's Exhibit, C, original patent, is a tracing, your memory is not sufficient to enable you to state positively whether every part represented in the drawings of Exhibit, C, is upon the drawing in Washington?

Objected to by complainant's counsel, 1st, Because, since that drawing was filed in the Patent Office, M. D. Leggett has been Commissioner of Patents; and,

2924 2d, Thomas J. W. Robertson applied for an extension of a patent, and obtained it by the fraudulent and unlawful attempt at cancellation of a caveat filed in the Patent Office on the 21st June, 1855, by Marcus P. Norton, for railroad printing-press; and,

3d, Because the defendants' counsel were Robertson's counsel in that business, and therefore it is fair to presume that the witness has no knowledge of the subject inquired about, unless he has been recently in the Patent Office.

2925 Defendants' counsel states, as a part of the question, that he refers to the condition of the drawing at the time it was sent to Washington only, and to witness's memory of it as it existed when he last saw it.

A. I believe it was a perfect duplicate at that time. For the reason stated in my last previous answer I would not be willing to swear positive, but my memory represents to me that it was so drawn as to contain every part now shown on the tracing.

X Q. 58. The two drawings, as they were sent to Washington on the application of this patent, were exact duplicates, were they?

A. I firmly believe they were.

2926 X Q. 59. Did you draw the specification of this patent, Exhibit C?

A. I did not.

× Q. 60. Who drew it?

A. I believe Charles D. Kellum drew it. I furnished him a list of the letters which I had placed upon the drawing, with a rough description of the parts upon or near which they were placed, as was my custom in all similar cases.

2927 × Q. 61. You say, in answer to Q. 4, that it was your duty to read over and compare specifications, especially as to whether they correctly described the inventions as represented by models and drawings. Did you do so in the case of this patent now in controversy?

A. Yes: I think I did.

× Q. 62. And you were satisfied that it correctly described the inventions "as represented by models and drawings"?

A. Yes: I think so.

2928 × Q. 63. Do you remember drawing any other parts of the tracing attached to Exhibit C, original patent, besides the dotted lines in Fig. 1?

A. I made the whole drawing. I believe there are no other parts.

× Q. 64. And the other parts of the drawing, the relief valve and other parts, do you remember making just as distinctly as you remember making the dotted lines in Fig. 1? or are you not positive whether they were made afterwards?

2929 A. There are two parts which I remember rather more distinctly than I do the others, for the reason that about them there was a dispute, one of which is the dotted lines of the vacuum-chamber, and the other is a letter A''' on the neck to the air-chamber of the engine.

× Q. 65. The other parts of these drawings you do not distinctly remember making, then?

2930 A. I believe I made them all, but they might have been re-touched after. The drawings are often re-touched in the Patent Office.

× Q. 66. You cannot swear, then, that you made the shadings of these drawings as they appear now, before the tracing went to the Patent Office.

A. If defendants' counsel would permit me to look at the tracing in the patent, and point to any particular part therein, I think I could swear positively; but not having it before me I should not wish to do so.

× Q. 67. So far as you remember it from your examinations of it, while giving testimony, you are willing  
2931 to swear that you made the shadings upon the tracing?

A. I believe I did.

× Q. 68. What dispute was there in regard to the part marked A'''?

A. I did not find that part had been described in the specification, as I intended it should be at the time I lettered it on the drawing. I insisted that it was a very important and material part, as Mr. Knibbs had so informed me; while Mr. Kellum insisted that it was  
2932 not material, and we had words over it.

× Q. 69. What did Mr. Knibbs say when telling you that it was an important and material part?

A. Before going to take sketches from the "Arba Reade" steamer, preparatory to making of drawings for the application, Mr. Norton told me that it was not necessary that I should draw the whole steamer, but I should be very particular to draw such parts of the steamer as were immediately connected with the invention of Mr. Knibbs, and such parts as might have a  
2933 bearing upon the improvement. Mr. Knibbs was present when I made the sketches; and he told me, after I had sketched the main water piston-pump of the engine, to be particular about showing the vacuum-chamber to the suction inlet, and the air-chamber to the discharge part. I did not show the whole air-chamber, as I did not wish to make the drawing too large. He said I should show sufficient of it to show its connection, and this I did. From Mr. Knibbs having been so particular about it, I thought Mr. Kellum should have described  
2934 it. I believe Mr. Norton, also, previous to my going, had mentioned the vacuum-chamber and air-chamber. I called them both air-chambers at the time.

× Q. 70. What did Mr. Norton say about these chambers, at that time?

Objected to as immaterial what he said, or whether he said any thing.

A. Mr. Norton told me to draw the little air-chamber, which is here called a vacuum-chamber, and such other parts as Mr. Knibbs would tell me were necessary.

2935 X Q. 71. Did he tell you to draw the air-chamber on the pressure side?

The same objections, and further objected to because he already said that he arranged those chambers on the drawings from the "Arba Reade" engine.

Defendants' counsel again protests against information being given to the witness while under cross-examination.

A. Well, I am not so positive about that as I am  
2936 about the small air-chamber. I took my instructions about that more from Mr. Knibbs.

X Q. 72. Why did Mr. Knibbs say that these two chambers must not be omitted?

A. Mr. Knibbs explained his invention to me as a means of reducing the excessive pressure; and, in explaining, he alluded to the air-chambers as increasing the pressure. He mentioned the piston might come to a stand-still if several of the hose outlets were suddenly shut off; and I understood him to say, that, without his  
2937 improvement, the sudden shutting off might seriously affect these air-chambers, particularly the large one. He expressly mentioned that the sudden shutting off, without any other outlet provided, would seriously affect the working parts of the engine, and in that connection he mentioned those particular chambers. That was why I considered them of importance.

X Q. 73. Did he say any thing about the importance of representing more than one outlet on the discharge side, or say any thing about its being essential  
2938 to his invention to have more than one outlet?

The same objections as to what he said, or didn't say, about it. Mr. Knibbs's patent is in suit, and that, of itself, will inform the Court very particularly what Mr. Knibbs then said about it, and what he thinks about it now.

A. From his explanations of his invention I understood it to only properly apply to an engine having more than one outlet. What other outlets there were in the engine on the side represented by the drawings  
 2939 were about the cut-off portions of the air-chamber tank. I do not think that he particularly ordered me to show more than the one, as I believe there was one directly opposite it at the other side.

× Q. 74. Was there any thing else to which he called your attention?

A. He explained his invention fully to me, and its advantages. I do not remember just now any parts other than the connecting tube between the discharge part and suction part of the main water-pump with the  
 2940 valves belonging to it.

× Q. 75. You do not, then, recollect that he said any thing to you about it being an essential part of his invention that this tube and relief valve, connecting the discharge with the suction, should be placed upon a piston-engine?

A. He particularly mentioned its advantage to the piston of the "Arba Reade" steamer, its allowing the piston to continue working all the time after several outlets had been shut off.

2941 He certainly led me to infer, and did absolutely convey to me, the idea that it was only applicable to an engine of that kind: that is to say, an engine having such an arrangement of piston-pump, suction, and varying outlets, such as the "Arba Reade" steamer then had.

× Q. 76. Did he express himself as satisfied with the drawings you made showing his invention?

A. I hardly think he did. I believe that he did express some dissatisfaction with the drawing; but  
 2942 upon reading the specification, and having it explained to him, I don't think he assented exactly, but he took our advice, or our word for it, that we considered his invention fully explained by the drawing and the specification taken in connection, and that the claims would be sufficient to cover the whole invention.

× Q. 77. What objections did he make?

A. He had an idea that other forms should be shown, and he seemed to have an idea that more of the steamer should have been shown. It was explained to  
 2943 him that any other manner of using his devices would be mere modifications, and come under the head of equivalents, and consequently the claims would be sufficient; and, with regard to the drawings, *I* explained to him that *I* could show the whole steamer, if necessary, by making new drawings, but *I* thought it would be entirely unnecessary, as *I* believed all the parts of his invention fully shown, and sufficient, of the adjacent parts, to illustrate the connection.

× Q. 78. What other forms did he have an idea  
 2944 should be shown?

A. He explained that his valve should be shown as working automatically, and also that the manner of using his invention on the "Osgood" steamer should be shown. We overruled him in this by explaining that his specification and claims, particularly the claims, were sufficient to cover both.

× Q. 79. Did he regard at that time the form of his invention as it existed on the steamer "Osgood," as an equivalent for the one shown in the drawings of the  
 2945 patent? or did he regard it as an important and valuable addition to and improvement upon the form of his invention upon "The Arba Reade"?

A. No: I believe he considered it to be essentially the same thing, performing the same functions in substantially the same manner.

× Q. 80. You say Mr. Knibbs had an idea that more of the steamer should have been shown. What parts do you refer to?

Objected to as immaterial, incompetent, and irrelevant.  
 2946

A. Not any particular parts. He had an idea that the application of his invention to a steam fire-engine would be more clearly shown if the entire steamer were represented. I think he would have been better satisfied if the entire air-chamber had been shown.

× Q. 81. Look at the photograph, complainant's Exhibit, "Arba Reade," and state whether you made

the drawings for this patent from the steam fire-engine represented in that photograph, or from the model, 2947 complainant's Exhibit, J ; and I refer especially to the part marked A''' in the drawing.

Objected to as immaterial.

A. The drawings were made principally from the steamer, as may be readily seen by comparing the several parts in the drawing with the photograph, even to the mouldings at the top and base of the main pump.

× Q. 82. Do I understand you that the part A''' in the drawing represents the pipe, or tube, which, in the photograph, turns upward at the left of the discharge side of the pump? and that A''' is not the tube 2948 curving upward in the model and seen behind the pump?

A. It is the part curving upwards, as seen in the photograph, and is not in any sense the round tube of the model. This may be easily understood by taking note of the shading or lining thereon in the drawing, as the said lining shows it to have had a straight side instead of a round one.

× Q. 83. Look at the photograph Exhibit, "Arba Reade," and point out the air-chamber on the pressure side, and so describe it that the Court may know where it is. 2949

A. The dome of the air-chamber is forward of the pump, and above the framework leading from the boiler in front part of the engine leading forward to the front axle and above the same. The part A''' runs out from the pressure side of the main water-pump, and, curving upward, passes through the said framework, connecting with the air-chamber, and forming, I 2950 believe, a part thereof. At least, so I understood at the time, and so I understand it at present.

× Q. 84. The photograph represents in that curve-pipe, which is the same as A''' in the drawing, two water-gates ; does it not?

A. I believe so.

× Q. 85. And those gates were on "The Arba Reade," were they, at the time you made the drawing?

A. I believe that photograph to be a perfectly accu-

rate representation of the steamer "Arba Reade," as  
2951 at that time constructed.

× Q. 86. (Question repeated.)

A. I have no doubt they were.

× Q. 87. Your memory is not sufficient to enable  
you to say whether they were, or not: is that it?

A. On the contrary, I distinctly remember the appearance of the engine at that time and the arrangement of its parts, precisely as shown in that photograph.

× Q. 88. Is the part marked E, in Fig. 2 of com-  
2952 plainant's Exhibit, C, a part of the air-pressure chamber? or does it act as such?

A. No: it is not a part of the air-pressure chamber, marked A'''.

× Q. 89. Is the part marked D in that figure, or the part marked A, a part of the air-pressure chamber?

A. The part marked D runs out from the discharge part of the pump. The part marked A is the pump-cylinder. The part marked A''', which I have mentioned as connecting with the air-chamber, connects  
2953 interiorly with the discharge part of that pump-cylinder A; and of course the elasticity of the air in the air-chamber exerts its influence upon the water within the discharge part of the pump, and in that sense may be considered a part thereof.

× Q. 90. What do you mean by "the air-chamber connects interiorly with the discharge part of that pump cylinder A"?

A. I mean that the inside communication between the air-chamber and the interior of the cylinder A, is  
2954 open to each other, so that water or air may pass between; or, in other words, that the interior of each communicates with each other.

× Q. 91. Was there a separate pipe for the air, and an exterior communication around it for the water up to the gates? Is that what you mean?

A. I am unable to state, as I did not see the interior. It is my impression that there was an outside casing, or square box, to protect an interior pipe; but I am not positive as to that.



2955    × Q. 92. And that outside casing enclosing the pipe, is the part which, in the photograph, curves upward from the left of the discharge side of the pump?

A. If it was a casing merely, it is that part. It was, I believe, composed of brass or copper; and it is the part marked A''' on the drawings of the patent, and the curved part alluded to in the question, as shown on the photograph; but I am not sure that it enclosed a pipe, as it may have served for a pipe itself.

2956    × Q. 93. In order to have the discharge-gates in this curved pipe act as such, and discharge water, the engine, when in operation, must have forced water up that pipe beyond the discharge-gates, must it not?

A. I should suppose so; but as to the exact construction of the interior of that part marked A'', I am unable to inform you, as I did not examine its interior at all.

2957    × Q. 94. All the discharge side of the pump within the cylinder A is a passage for the water from the piston to the discharge-gates, and it is all equally with the part marked A''' acted upon by the water under pressure in the compressed air-chamber, is it not?

A. I have always so understood it.

× Q. 95. Then the part marked A''', containing water as high as the discharge-gates, is no more a part of the air-pressure chamber than is the discharge part of the cylinder A?

A. If the discharge-gates pass directly from the part A'', I should suppose not; but of that I am not able to state from actual knowledge.

2958    × Q. 96. You mean if there is no interior pipe, do you?

A. Whether there is an interior pipe, or not, I believe the water would be forced somewhat into the part connecting with the air-chamber, and of course the water would be under pressure therefrom, both within such pipe and the part of the pump connected therewith.

2959    × Q. 97. Is there any thing in the specifications and drawings of this patent to show that part A''' does not end at the discharge-gates to which it leads? If so, please point it out.

A. I find the specification of the patent speaks of more than one discharging outlet, but I do not find mention of any connected with said part, A''', and I do not find any description of that part marked A'''. I remember, at the time the drawing was made, calling Mr. Kellum's attention to it, and to which necessity; but I was overruled in that matter.

2960 X Q. 98. How do you know that the dome, or air-chamber, on the top of "Arba Reade," is not connected to the discharge side of the pump by a pipe, or connection, running into the top of the cylinder A, and not through the tube A''' at all?

A. Because my attention was not called to any such tube, and my attention was called to the part marked A'''. I do not believe that there was any other connection with it. I am pretty positive there was not, and I do not find any in the photograph now in hand. I believe that engines constructed by the Amos-  
2961 keag Company, in most, if not all, cases, have the connection that way.

X Q. 99. Look at the wood-cut upon p. 20 of complainant's pamphlet exhibit, "Amoskeag" steam fire-engine, 1866, March 5, 1879, W. G. E., Special Ex'r, and state whether that correctly represents the steam fire-engine "Arba Reade" shown in the photograph to which you have testified, with the exception of the tube connecting the discharge and suction side of the pump.

2962 Objected to as immaterial and no sort of consequence whether it is, or is not.

2d, Not cross-examination of the witness.

3d, What pictures N. S. Bean, one of defendants' witnesses, may have made of "The Arba Reade," is incompetent.

A. The engraving in question is not a correct representation of the steamer "Arba Reade" as she was at the time that photograph was taken, and the drawings of the patent in suit made. The photograph being by far the most perfect, I pronounce the photograph perfectly accurate, and the engraving very far  
2963 from being. The engraving, I believe, is intended

to represent the general construction of a class of engines, the name "Arba Reade" being simply put thereon to give credit to that class: and while in some particulars each engine of the class would correspond with others of the same class, I believe they were made to differ in very many other particulars; for instance, I have always heard that the steamer "Os-  
 2964 good" of the city of Troy, was made from the same patterns from which "The Arba Reade" was made; and yet I believe they differed so much, that, when I have mentioned it to competent machinists, they expressed doubts of it.

× Q. 100. The wood-cut shows more clearly than the photograph, does it not, the construction of that part of the engine represented by A''' in complainant's patent, and shows more clearly that this part is square, does it not?

2965 The same objection.

A. No, I think not. That portion corresponding with the part A''' of the drawings, is shown as being connected with the pump-cylinder all the way up to the frame, and, although shown with straight sides, its section could not possibly have formed a square. At the same time, as shown in said engraving, it might possibly have enclosed a pipe leading to the air-chamber. I cannot conceive for what purpose it could have been put there other than that.

2966 × Q. 101. With the exception you have mentioned, the representation of the part corresponding with A''' of the wood-cut shown you, is correct, is it not?

The same objections.

A. If intended to be a correct representation of the steamer "Reade," I should say that not only that part corresponding with A''' of the drawing, but the main water-pump also was incorrect, especially at the top.

2967 *Re-direct by Hon. MARCUS P. NORTON.*

R. D. Q. 102. The main water suction and force steam fire-pump of the steam-engine "Arba Reade" is a piston-pump, is it not, double-acting in its operation?

A. It is.

R. D. Q. 103. And it was a main water-pump of that kind to which Knibbs applied his invention, of which you made the drawings that you testified about, was it not?

A. It was.

2968

*Re-cross by C. W. BETTS, Esq.*

× Q. 104. Look at the patent in controversy, in that part which gives a description of the invention after the words "to enable others skilled in the art to make and use the same," and state what there is, if any thing, which shows that the invention is applicable to a piston-pump only.

A. I find that it mentions it as connected with a piston-pump, and not with any other; and I should  
2969 hardly infer from reading that portion over, referred to in the question, that it was ever intended for any other kind of pump.

× Q. 105. Where does it say any thing about piston-pump?

A. In that part of the specification in the patent in suit the fifteenth line states as follows: "At the same time or stroke of the piston." I understand from that that the invention was applied to a piston-pump only; and I can't see what particular advantage it would be  
2970 to any other kind of pump just at present, and I find no mention of any other kind of pump in that part referred to.

× Q. 106. How did it happen, when Mr. Knibbs was so particular in telling you that the piston-pump and the air-chamber on the pressure side and the several discharge-gates were essential and material parts of his invention, that you, when exercising your duty, seeing that all parts of the invention were described, did not see to it that these, important particulars were so de-  
2971 tailed that their essential nature would appear?

Objected to. 1st, There is no evidence of any over-anxiety on the part of Knibbs.

2d, The witness exercised his own judgment in doing what he did about the drawings, and consulted with Knibbs, just as he ought to have done.

3d, That the important particulars spoken of in the question were duly seen to and properly guarded, so that any man, though a fool, need not err therein; and therefore the question is improper and irrelevant and  
2972 immaterial.

A. I believe that Mr. Norton himself would note if there was any deficiency, and would have it corrected before put on file in the Patent Office. I believe that sufficient was shown, when taken in connection with the specification, to correct the illustration, and explain Mr. Knibbs's invention.

× Q. 107. Do you consider that the patent contains a full, clear, and exact description of the air-chamber on the pressure side of the pump, which, you  
2973 say, was an essential part of the invention?

A. I do not consider the air-chamber in question any part of the invention of Mr. Knibbs, but a very material part of the steam fire-engine to which Mr. Knibbs's invention is applicable. I consider that the drawings show enough of it, when taken in connection with the representation of the pump there shown, to convey the idea of what particular kind of pump he intended his invention to be connected with.

RICHARD H. REILLÉ.

2974

Sworn to before me this January 2, 1880,

JOHN A. SHIELDS,  
*Examiner, &c.*

Adjourned to Saturday, January 3, 1880, at 12, M.

2975

NEW YORK, January 3, 1880.  
1 o'clock P.M.

Met pursuant to adjournment.

Present — Hon. Marcus P. Norton of counsel for complainant, and C. W. Betts, Esq., of counsel for defendants.

On motion of complainant's counsel, the taking of testimony on rebuttal by complainant is adjourned and continued to Thursday, the 15th January, 1880, at 2976 10.30 o'clock A.M., at the same place, when the same will be resumed by complainant's counsel, and continued from day to day until completed.

## United States Circuit Court,

2977

SOUTHERN DISTRICT OF NEW YORK.

CHRISTOPHER C. CAMPBELL,

*versus*

THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK.

Additional rebuttal evidence on the part of the complainant taken by permission of counsel for the respective parties, and without any written stipulation. 2978

Present — Marcus P. Norton, Esq., of counsel for the complainant.

No one present for the defendants.

NEW YORK, September 30, 1880.

In conformity to a verbal stipulation or understanding between and on the part of Marcus P. Norton, solicitor for the complainant in this cause, and Frederick H. Betts of counsel for the defendants herein, and on the application of the complainant's solicitor to said Betts, this cause is now and here opened for the taking of further testimony on the part of the complainant, — the same being limited, however, to the introduction of a single instrument in writing under the seal of the United States Patent Office and the signature of W. H. Doolittle, Acting Commissioner of 2979

Patents, which is here to be offered as an exhibit for the complainant, subject to such objections as Mr. Betts  
 2980 may deem proper to take whenever the examiner shall present this record to him for that purpose, as he is not now present.

Complainant's counsel here offers in evidence a letter from the United States Patent Office in the following words and figures; to wit,—

UNITED STATES PATENT OFFICE,  
 August 27, 1855.

SIR, — I have to acknowledge the receipt of an ad-  
 2981 dition to your caveat for railroad ticket printing-press, which has been duly filed.

Very respectfully yours,

S. T. SHUGERT,  
*Acting Commissioner of Patents.*

MARCUS P. NORTON, Esq.,  
*Tinmouth, Rutland County, Vt.*

2982

The same being certified to on the sixth day of March, 1880, under the seal of the United States Patent Office by W. H. Doolittle, Acting Commissioner of Patents; and I ask the examiner to receive and mark the same, "Complainant's Exhibit, Norton's Caveat, August 27, 1855."

This paper is offered in evidence in connection with the matters personal in their nature, to complainant's solicitor, Marcus P. Norton, first raised and entered  
 2983 into by Mr. C. Wyllys Betts, one of defendants' counsel, and for no other purpose than the purposes above alluded to.

Defendants' counsel, upon the submission to him of the record aforesaid, now objects to said paper,—

1st, As immaterial to any issue in this cause.

2d, As not tending to explain any of the charges to which it is offered as an answer.

3d, As not proved; and to the certificate as not

competent proof of the alleged paper: said certificate  
2984 being in the words and figures following:—

DEPARTMENT OF THE INTERIOR.—UNITED  
STATES PATENT OFFICE.

*To all persons to whom these presents shall come,  
Greeting.*

This is to certify that the annexed is a true copy  
2985 from the records of this office.

**In testimony whereof**, I, W. H. Doolittle, Act-  
ing Commissioner of Patents, have caused  
the seal of the Patent Office to be hereunto  
[L.S.] affixed this sixth day of March, in the year  
of our Lord one thousand eight hundred  
and eighty, and of the independence of the  
United States the one hundred and fourth.

W. H. DOOLITTLE,

2986

*Acting Commissioner.*



**Circuit Court of the United States,**

IN AND FOR THE SOUTHERN DISTRICT OF NEW YORK.

IN EQUITY.

CHRISTOPHER C. CAMPBELL.

*Complainant, and Assignee in Trust,*

*versus*

2987 THE MAYOR, ALDERMEN, AND COMMONALTY OF THE  
CITY OF NEW YORK,

*Defendants, &c.*

*United States of America,* } ss.  
*Southern District of New York.* }

I, John A. Shields, an examiner duly appointed by  
the Circuit Court of the United States for the South-  
ern District of New York, do hereby certify that the  
foregoing are the proofs for final hearing, taken before  
2988 me in the above entitled cause on the part of the com-  
plainant, under and pursuant to the 67th Rule of the  
Supreme Court of the United States, as amended.

I do further certify, that I am not of Counsel nor  
Attorney for either of the parties, nor in anywise in-  
terested in the event of said cause.

I further certify, that Mr. Marcus P. Norton appeared  
on the part of complainant, and Mr. C. W. Betts ap-  
peared on the part of defendants in the taking of said  
proofs.

2989

JOHN A. SHIELDS,

*Examiner, &c.*

## EXHIBITS.

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### **Complainant's Exhibit Bean No. 1,**

J. A. S., EX'R, DECEMBER 15, 1879.

DEPARTMENT OF THE INTERIOR,—UNITED  
STATES PATENT OFFICE.

*To all persons to whom these presents shall come, Greeting:*

2990 This is to certify that the annexed is a true copy from the records of this office of the letters-patent and certificate of extension granted Nehemiah S. Bean, June 12, 1860, No. 28,644, for improvement in pumps.

2991 **In testimony whereof**, I, W. H. Doolittle, Acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this fourth day of December, in the year of our Lord one thousand eight hundred and seventy-nine, and of the independence of the United States the one hundred and fourth.

[SEAL]

W. H. DOOLITTLE,  
*Acting Commissioner.*

---

UNITED STATES OF AMERICA.

2992 *To all to whom these letters-patent shall come:*

**Whereas**, Nehemiah S. Bean of Manchester, N.H., has alleged that he has invented a new and useful improvement in pumps, which he states has not been known or used before his application; has made oath

that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the  
 2998 Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose:—

These are, therefore, to grant, according to law, to the said Nehemiah S. Bean, his heirs, administrators, or assigns, for the term of fourteen years from the twelfth day of June, one thousand eight hundred and sixty, the full and exclusive right and liberty of mak-  
 2994 ing, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Nehemiah S. Bean in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof, I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

2995 [SEAL] Given under my hand, at the city of Washington, this twelfth day of June, in the year of our Lord one thousand eight hundred and sixty, and of the independence of the United States of America the eighty-fourth.

JACOB THOMPSON,  
*Secretary of the Interior.*

Countersigned, and sealed with the }  
 2996 seal of the Patent Office. }

PHILIP F. THOMAS,  
*Commissioner of Patents.*

THE SCHEDULE REFERRED TO IN THESE  
LETTERS-PATENT, AND MAKING PART  
OF THE SAME.

*To all whom it may concern :*

2997 Be it known that I, N. S. Bean of Manchester, in the  
county of Hillsborough, and State of New Hampshire,  
have invented a new and useful improvement in pumps;  
and I do hereby declare that the following, taken in  
connection with the drawings which accompany and  
form part of this specification, is a description thereof  
so full and exact as to enable those skilled in the art to  
practise my invention. Fig. 1 is a vertical sectional  
elevation, and Fig. 2 a plan of a pump embodying my  
invention. Similar letters refer to similar parts in  
2998 both figures. (a) is the pump cylinder which is cast  
concentric with the casing (c), and united thereto by  
the partitions (b, b), shown in dotted lines in both fig-  
ures. The valve-plates (d, d) fit upon the cylinder,  
partitions, and casing, and, by means of the flanges  
(e), which form part of the plates, hold the caps and  
valve-plates concentric with the cylinder and casing.

The valves are plain rubber discs sliding on central  
spindles (i), provided with broad heads to limit the  
throw of the valves, and with spiral springs between  
2999 the heads and valves to quicken the return of the lat-  
ter to their seats upon the plates (d). The grated valve-  
seats may be formed in the plates (d), or they may be  
made separate, and firmly fixed thereon. The valve  
spindles (i) are screwed into the centre of the valve-  
seat, which arrangement renders the removal and re-  
placement of the valves easy. By the *valve-plates all  
communication from one side of the partitions to the  
other is prevented, except through the valve passages.  
The space between the casing and cylinder is formed*  
3000 *by the partitions (b) into suction and delivery passages  
(f) and (g). The suction valves (h) are located on  
the outer sides of the valve-plates, and the delivery  
valves (j) on the inner sides thereof. The bolts which  
hold the caps (k) and valve-plates to the casing and*

cylinder are screwed into bosses cast on (a) and (c), and pass through the bosses cast with the caps.

- The suction pipe (l) is bolted around an opening formed in the suction side of the casing and the branch delivery pipe (m), around an opening in the delivery side; these pipes are surmounted by suitable air vessels. Any suitable legs or projections may be cast upon the casing between the plates (d) and the pipes (l) and (m), by means of which the pump may be secured to any suitable foundation in such a manner that the caps (k) can be got at for removal. It will be seen that by removal of the bolts which hold the caps in their places, the valve-plates can be taken off and the valves be examined or removed, and replaced, and also that all the delivery valves and the piston can be got at without the disturbing the plates. In the construction of the pump it will be obvious that the joints between the valve-plates (d), the caps (k), the cylinder, casing, and bosses thereon, and the partitions (b), are plane surfaces easily made in a lathe. The cylinder may be brass-lined, as is represented in the drawings. The piston is made of sufficient length to allow of a movement thereof nearly to each cap (k), and it will be obvious from inspection of the drawings that the arrangement of parts there shown leaves an unusually small amount of clearance between the valves and the piston when at the end of the stroke compared with the great area of passage through the valve-seats. The nature of my invention consists in the peculiar concentric arrangement and combination of parts herein shown and described, by which I obtain the following advantages, which are the object of my invention: First, *a very large area of passage past the valves is obtained, which is of great importance in pumps worked with a great speed of piston, as in Steam Fire Engine*
- 8001 *Pumps, to which my invention is peculiarly adapted, for with great area of passage past the valves but small lift of these is required, consequently they close quickly, and permit but little loss in return currents. Second, the valves, which are the parts most subject to wear, stoppage, and derangement, are peculiarly accessible.*

Third, the *clearance between the valves and the piston* when *at the end of its stroke*, is reduced to a remarkably *small amount as compared to the area of passage past the valves*, which gives great draughting power to the pump. Fourth, the joints and *wearing surfaces* of the pump itself are all capable of *being made by a lathe*, which reduces its cost to the minimum. I make no claim to *novelty of parts separately considered*, or to their action. *My invention is limited to novelty of arrangement and combination of old parts* working together to produce a simple, cheap, effective, and durable double acting *suction and force pump*.

What I claim as my invention, and desire to secure by letters-patent of the United States, is the concentric arrangement and combination of the pump cylinder suction and discharge passage, caps, and valve-plates, with valves located on opposite sides thereof, all operating together substantially as described.

N. S. BEAN.

Witnesses:

J. D. WATSON,

F. T. E. RICHARDSON.

3007

#### CERTIFICATE OF EXTENSION.

**Whereas**, upon the petition of Nehemiah S. Bean of Manchester, N.H., for the extension of the patent granted to him June 12, 1860, for an "improvement in pumps," the undersigned, in accordance with the Act of Congress, approved the eighth day of July, 1870, entitled "An Act to revise, consolidate, and amend the statutes relating to patents and copyrights," did, on this eleventh day of June, 1874, decide that said patent ought to be extended:—

3008

Now, therefore, I, Mortimer D. Leggett, Commissioner of Patents, by virtue of the power vested in me by said Act of Congress, do renew and extend the said patent, and certify that the same is hereby extended for the term of seven years from and after the expiration of the first term; viz., from the twelfth day of

June, 1874, which certificate being duly entered of record in the Patent Office, the said patent has now the same effect in law as though the same had been  
 8009 originally granted for the term of twenty-one years.

**In testimony whereof**, I have caused the seal of the Patent Office to be hereunto affixed  
 [L. s.] this eleventh day of June, 1874, and of the independence of the United States the ninety-eighth.

M. D. LEGGETT,

*Commissioner.*

Examined E. A. M., H. M. H.

8010

### **Complainant's Exhibit Bean No. 2,**

J. A. S., Ex'r, DECEMBER 15, 1879.

DEPARTMENT OF THE INTERIOR.—UNITED STATES PATENT OFFICE.

8011

*To all persons to whom these presents shall come, Greeting:*

This is to certify that the annexed is a true copy from the records of this office of the letters-patent granted Amoskeag Manufacturing Company, July 3, 1860, No. 29,032, for improved steam-boiler.

**In testimony whereof**, I, W. H. Doolittle, Acting Commissioner of Patents, have caused the seal of the Patent Office to be  
 8012 [SEAL] hereunto affixed this fourth day of December, in the year of our Lord one thousand eight hundred and seventy-nine, and of the independence of the United States the one hundred and fourth.

W. H. DOOLITTLE,

*Acting Commissioner.*

## UNITED STATES OF AMERICA.

3013 *To all to whom these letters-patent shall come :*

**Whereas**, N. S. Bean of Manchester, N.H., and J. G. Collins of Boston, Mass., have alleged that they have invented a new and useful improved steam-boiler (they having assigned their right, title, and interest in said boiler to the Amoskeag Manufacturing Company of said Manchester), which they state has not been known or used before their application, have made oath that they are citizens of the United States; that they do verily believe that they are the original and  
 3014 first inventors or discoverers of the said boiler, and that the same hath not, to the best of their knowledge and belief, been previously known or used; have paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said boiler, and praying that a patent may be granted for that purpose:—

These are, therefore, to grant, according to law, to the said Amoskeag Manufacturing Company, their  
 3015 heirs, administrators, or assigns, for the term of fourteen years from the third day of July, 1860, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said boiler, a description whereof is given in the words of the said N. S. Bean and J. G. Collins, in the schedule hereunto annexed, and is made part of these presents.

**In testimony whereof**, I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

3016 [SEAL] Given under my hand, at the city of Washington, this third day of July, in the year of our Lord one thousand eight hundred and sixty, and of the independence of the United States of America the eighty-fourth.

JACOB THOMPSON,

*Secretary of the Interior.*



Countersigned, and sealed with the }  
 seal of the Patent Office. }

3017

PHILIP F. THOMAS,  
*Commissioner of Patents.*

THE SCHEDULE REFERRED TO IN THESE  
 LETTERS-PATENT, AND MAKING PART  
 OF THE SAME.

*To all whom it may concern :*

Be it known that we, N. S. Bean of Manchester, in  
 3018 Hillsboro County, in the State of New Hampshire, and  
 T. J. Collins of Boston, in the county of Suffolk and  
 State of Massachusetts, have invented a new and use-  
 ful improvement in such vertical tubular steam-boilers  
 as pass the products of combustion through tubes into  
 a smoke-box within the boiler, and have the combus-  
 tion chamber, smoke-box, and tubes surrounded by  
 water; the aim of our invention being to produce a  
 boiler peculiarly adapted for use in steam fire-engines,  
 and wherever a light, safe, powerful, portable boiler is  
 3019 required; and we do hereby declare that the following,  
 taken in connection with the drawings which accom-  
 pany and form part of this specification, is a descrip-  
 tion of our invention so full and exact as to enable  
 those skilled in the art to practise it. Figs. 1 and 2  
 show, respectively, in half elevation and vertical sec-  
 tion, and in half plan and horizontal section, a boiler  
 embodying our invention. The waist (*a*) is contracted  
 so as nearly to touch the outermost tubes (*b*). These  
 and those surrounded by them extend from the crown-  
 3020 sheet (*c*) of the furnace to the upper tube-sheet (*d*),  
 which forms the lower sheet of the smoke-box. This  
 is made up of (*d*), the ring (*e*), and cover (*f*), the  
 cover being bolted to ring (*e*), which is riveted to (*e*),  
 so as to be removable to get at the ends of the tubes  
 for repairs and cleaning. The chimney is shown as  
 united with (*f*), and as extending through the steam  
 space to the top (*g*) of the boiler. This top (*g*) is  
 secured to the rings (*h*) and (*i*) (which are riveted to

- the outer shell of the boiler and to the chimney) by means of bolts; this affords facilities for getting at the interior of the boiler for repairs and cleaning. The upper portion of our boiler is expanded beyond the waist in order to give a large area of water-level, from which the steam can escape, and a large steam reservoir, from which to supply the steam cylinder. The base of the boiler is also enlarged beyond the diameter of the waist for the purpose of making the crown-sheet (c) of the furnace large enough to receive the number of tubes necessary to fill the waist, to give a large grate so as to supply sufficient air to the fire, which can thus be made thin, and can depend upon natural draft in getting up steam before the engine is started and the blast applied, and so as to receive a supply of fuel sufficient to crowd the tubes with flame, economy of fuel being of entirely secondary importance in steam fire-engine boilers. In the construction of our boiler, substantially as shown and described, it will be observed that the top of the smoke-box, being below the water-level, forms a most effective heating surface; also, that there is no superabundance of water remote from the heating surfaces to add to the weight of the boiler, and requiring time to be heated. It will also be seen that, while the total quantity of water contained by the boiler is small, the quantity at or near the water-level is comparatively large, which lessens the sudden and dangerous fluctuations of the water-level, which are common in most boilers where the ratio of heating surface to the amount of water approximates to that herein shown. The object of our invention is to produce a boiler that shall unite lightness with strength; that shall have great and quick steam-producing capacity as compared with its bulk and with its weight when filled with water in readiness for operation; that shall contain, in comparison with its heating surface, but a small amount of water, with a large proportion of this located near the water-level; that shall have large grate and evaporative areas, large combustion and steam chambers, and a smoke-box submerged so as to render it effective heating sur-

3025 face. The nature of our invention consists in the relative arrangement and combination of parts substantially as herein described, by which the above object is accomplished. We are aware that vertical fire-tube boilers have been made with a submerged smoke-box, but without contraction of the waist; also that they have been made with a contracted waist, but with the tubes, or the smoke-box into which they discharge, extending through the upper or steam space of the boiler. To such boilers we make no claim; they  
 3026 are defective in the important requirements of a perfect steam fire-engine boiler.

What we claim as new, and desire to secure by letters-patent of the United States is,—The within described relative arrangement of parts in a vertical boiler having fire-tubes, the same consisting of an enlarged fire-box and dome, contracted waist, and submerged smoke-box, substantially as set forth.

N. S. BEAN.

Witnesses to N. S. B.,

3027 J. D. WATSON,  
 F. T. E. RICHARDSON.

J. G. COLLINS.

Witnesses to J. G. C.,

W. G. RUSSELL, to J. G. C.  
 HENRY W. HAYNES.

Examined L. M., C. F.

8028

### **Complainant's Exhibit Bean No. 3,**

J. A. S., Ex'r, DECEMBER 15, 1879.

DEPARTMENT OF THE INTERIOR,—UNITED  
 STATES PATENT OFFICE.

*To all persons to whom these presents shall come, Greeting:*

This is to certify that the annexed is a true copy  
 8029 from the records of this office of the letters-patent

granted Amoskeag Manufacturing Company, January 15, 1861, No. 31,138, for improvement in steam fire-engines.

**In testimony whereof**, I, H. E. Paine, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed

[SEAL] this sixteenth day of December, in the year of our Lord one thousand eight hundred and seventy-nine, and of the independence of the United States the one hundred and fourth.

H. E. PAINE,  
Commissioner.

---

## UNITED STATES OF AMERICA.

*To all to whom these letters-patent shall come :*

3031 **Whereas**, Nehemiah S. Bean of Manchester, N.H., has alleged that he has invented a new and useful improvement in steam fire-engines (he having assigned his right, title, and interest in said improvement to the Amoskeag Manufacturing Company of said Manchester), which he states has not been known or used before his application; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the  
3032 best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose : —

These are, therefore, to grant, according to law, to the said Amoskeag Manufacturing Company, their heirs, administrators, or assigns, for the term of four-  
3033 teen years from the fifteenth day of January, 1861, the full and exclusive right and liberty of making, con-

structing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Nehemiah S. Bean, in the schedule hereunto annexed, and is made part of these presents.

3034 **In testimony whereof**, I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

[SEAL] Given under my hand, at the city of Washington, this fifteenth day of January, in the year of our Lord one thousand eight hundred and sixty-one, and of the independence of the United States of America the eighty-fifth.

MOSES KELLY,  
*Acting Secretary of the Interior.*

3035 Countersigned, and sealed with the }  
seal of the Patent Office. }

S. T. SHUGERT,  
*Acting Commissioner of Patents.*

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THE SCHEDULE REFERRED TO IN THESE  
LETTERS-PATENT, AND MAKING PART  
OF THE SAME.

3036

*To all whom it may concern :*

Be it known that I, Nehemiah S. Bean of Manchester, in Hillsboro County, in the State of New Hampshire, have invented certain new and useful improvements in steam fire-engines; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention so full and exact as to enable those skilled in the art to practise it.

3037 My invention relates to, and is an improvement upon, that description of steam fire-engines, which have a vertical boiler with a tube (not necessarily

cylindrical) attached to and extending therefrom at, or nearly at, a right angle with the boiler, which tube, in some cases, serves the purpose of a tank for the feed-water to the boiler, and as a bed-plate for the mechanism or a part of it; and, viewing the engine as a carriage, or wagon, the tube serves the purpose of a "perch-pole," or forward part of a wagon body, to  
 3038 which the forward wheels are connected, generally so that they can turn completely under the tube.

My invention consists in the bifurcation of such a tube, and the employment of its capacity, not only for tank purposes, but also for the vacuum and air-chambers of the pump. The bifurcation of the tube enables me to obtain a peculiarly advantageous, well-balanced, economical, and convenient arrangement of a vertical steam-cylinder and pump of a fire-engine, while it has the functions of the "perch-pole" and bed-  
 3039 plate, as did the straight tube; while, by the employment and division of the capacity of this tube for air and vacuum chambers, nearly all of the cost and weight of ordinary air and vacuum chambers are saved. In the drawings, similar letters refer to similar parts in the different figures, of which Fig. 1 is a plan, with the inner, upper, fourth part of the tube removed, so as to show in section what I deem the best method of constructing it; Fig. 2, a side view; and Fig. 3, an end view of so much of a steam fire-engine as embodies my  
 3040 invention, or is necessary in describing the same. *A* denotes the boiler to which the tube *B* is secured; and *C*, such a double-acting suction and force pump as was patented to me in the United States on the twelfth day of June, 1860. Within the tube the heads, shown in Fig. 1, divide it into compartments, the space between heads, *a* and *b*, being used for a vacuum-chamber, that between *b* and *c* for a water-tank, and that between *c* and *d* for an air-chamber. The suction and delivery passages of the pump are connected with the vacuum  
 3041 and air chambers by the pipes *E* and *f*, which also serve to connect the pump with the tube in such a manner that the piston-rod of the former plays between the two parts of the tube.

By this arrangement it will be evident that the vacuum and air-chambers of the pump can be upon opposite sides of the fire-engine in harmony, and in direct communication with the suction and delivery passages of the pump from which the hose can lead in a direct line from and to the engine; and that the  
 3042 steam-cylinder, whose piston-rod is a continuation of that of the pump, can be placed directly over the pump, and may be secured wholly, or in part, to the tube or boiler, or to both, the two parts of the tube serving most conveniently for the support of the fly-wheel shaft bearings; while the crank and other parts in immediate connection therewith play in the opening between the parts of the tube.

While the detail of the manner of the construction of the tube may be left to the ordinary skill and judgment of those skilled in the construction of steam fire-engines and other mechanism of a like character, and to be modified by the circumstances of each case, I will describe the detail which I practise. The straight parts of the tube are made of wrought metal (I prefer drawn, seamless, brass tubes), with open ends, which afford facility for insertion of the heads *a*, *b*, *c*, *d*, which are fastened and secured within the tube, wherever desired, by riveting or by brazing, or by both combined. The return bend I form of wrought metal, and  
 3044 the pieces which bolt directly to the boiler are most conveniently made of castings. The different parts forming the whole of the bifurcated tube are united with rings around the joints, and by riveting or brazing, or both.

Having described my invention, I claim, as an improvement in the construction of steam fire-engines, the bifurcated arrangement of the tubular metallic "perch-pole" or "fore-body," whether the same is divided into compartments or not.

3045

N. S. BEAN.

Witnesses:

J. D. WATSON,

A. A. BALCH.

Examined E. A. M., H. M. H.

## **"Arba Reade" Agreement,**

J. A. S., EX'R, DECEMBER 15, 1879.

- 8046 The Amoskeag Manufacturing Company will make and deliver to the "Arba Reed" Steam Fire-Engine Company No. 1, in the city of Troy, State of New York, a steam fire-engine, with a pump six inches disc, twelve inches stroke, and a steam cylinder *about* ten inches disc, and twelve inches stroke. The boiler to be of the same plate, size, and style as that on the steamer "Eagle" of Boston, and the same to have a spark-catcher and an ash-pan. The running gear is to be of the same description as that on said steamer
- 8047 "Eagle," and to include the "brake." The weight of this engine will be from three hundred to five hundred pounds lighter than said "Eagle." It is to have a tender of the same description attached. It will be furnished with twenty-eight feet of 4½ inch section hose, with the Lawton & Bliss coupling, and with two hydrant attachments. Two discharge-pipes with a series of nozzles of various sizes. It will have four outlets for leading hose, each with a gate, and will be furnished with such small tools as are necessary to use
- 8048 about the engine.

This engine will be guaranteed to be complete and satisfactory in every particular of workmanship, material, and performance. The price in no case to exceed three thousand dollars for the engine, delivered in said Troy, to the satisfaction of the committee, on or about the 1st of March, 1880.

E. A. STRAW, *Agent*.

TROY, DECEMBER 14, 1859.

- 8049 We, the undersigned committee of the "Arba Reed" Steam Fire-Engine Company, do hereby accept the above proposition of the Amoskeag Manufacturing Company.

H. B. STARBUCK.

L. L. SOUTHWICK.

TROY, DECEMBER 14, 1859.



**Exhibit "Public Ledger,"**

8050

J. A. S., EX'R, DECEMBER 15, 1879.

PUBLIC LEDGER AND DAILY TRANSCRIPT,  
PHILADELPHIA, WEDNESDAY, JUNE 30, 1858.**STEAM FIRE-ENGINES. — THEIR INTRODUCTION  
INTO THE FIRE DEPARTMENT.**

- The steam fire-engine, after encountering great opposition, has, by its own inherent merits, made itself popular; and the fire companies most distinguished for public spirit and usefulness, are making arrangements to supply the city with the number required for its protection, looking eventually to superseding entirely the hand-engine. The character of Philadelphia is
- 8051 essentially conservative. Every thing new is received with caution, and ventured upon deliberately and carefully. When the utility of it becomes manifest, prejudice at once breaks down, and the innovation becomes immediately as much an object of favor as it formerly had been one of opposition. We are not disposed to find fault with this characteristic of our people. It has its advantages and its disadvantages; and, where there is so large a measure of practical common sense to guide the public mind, there is no fear that a right decision
- 8052 upon any public topic will not be reached. It has been so with the steam fire-engine. First received with derision, then threatened with violence, it steadily made its way in public estimation, and especially with that class of our citizens upon whom the labor of subduing a conflagration is imposed. The firemen saw its advantages, and the increased efficiency which it would give to their department, which would render its services more valuable to the public. Without their appreciation of this fact and their cordial co-operation, the work of improvement would have been long delayed. With their
- 8053 assistance it has sprung at once into practical operation.

A considerable portion of the success of this improvement is no doubt due to the science and skill of our workshops. If Cincinnati were the first to use steam fire-engines, Philadelphia is the first to produce a

machine which will serve as a model for all other cities wishing to introduce the same improved method of extinguishing fires. There is as much difference, nearly,  
 3054 between Mr. Shawk's unwieldy and imperfect engine and that which comes from the workshops of Messrs. Reanie, Neafie, & Co., as there is between the first locomotive and one of Norris's latest construction. These intelligent mechanics found no difficulty in meeting the wants of the fire-department, so soon as the necessity of improved fire apparatus became apparent and desirable. The experiments with "The Young America" and "Fire-Fly" proved that steam could be applied advantageously to the extinguishment of fires; and  
 3055 though both of these engines were rejected as unsuitable, yet the idea of their employment took favorable hold of minds better skilled in mechanical science than the builders of those engines. "The Philadelphia" and "The Hope," as well as "The Baltimore," the latter constructed for the Baltimore firemen, are the improved results.

The first-named of these was built for the Philadelphia Hose Company, the one which took the initiative in introducing this improved apparatus into the department.  
 3056 At a meeting held in April, 1857, Mr. C. Tiers Myers submitted a resolution, which was adopted, that an advertisement be inserted in the papers, inviting plans and estimates from Philadelphia mechanics for the building of a steam fire-engine. The president of the meeting appointed, as a committee to carry out the resolution, Messrs. C. Tiers Myers, John E. Neille, John K. Kane, Samuel V. Merrick, Thomas S. Crombargar, W. D. Sherrerd, and Richard Vaux.

Within a few weeks, plans and estimates were exhibited to the company by the enterprising firm of Reanie, Neafie, & Co. This firm agreed to built an engine, and guaranteed that it should perform to the entire satisfaction of the company before any money would be received for her. Under such a contract as this "The Philadelphia" was built, and, on the 21st of January, 1858, delivered to the company, who were to try her during sixty days, so as to fully test its powers as a

first-class engine. A number of trials took place, all of which were eminently successful.

- 3058 Other companies immediately made arrangements for obtaining similar fire-machines. The Hope Hose Company has just received and housed one constructed by Reanie, Neafie, & Co., and orders have been received for building three others, — one for the Hibernia, the Weccacoe, and the Delaware engine companies. One, also, it is expected, will be built for New York. This improvement, therefore, not only leads to better service to the city, but it is a source of profit to our mechanics, and keeps our workshops in operation during a period
- 3059 of general stagnation in all mechanical pursuits.

- The introduction of these new machines will necessarily produce some changes in the fire-department. As the effective power of each company is largely increased by improved machines, the necessity for any increase in their numbers will diminish in the same proportion. Instead of frittering away small appropriations among a great number of less serviceable companies, the money the public devote to their support can be judiciously applied to the aid of the steam-engines.
- 3060 The rivalries growing out of so many distinct and independent organizations will gradually subside; and system, harmony, and co-operation render the department one of the most effective in the world.

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### **Complainant's Exhibit L'Amoreaux,**

J. A. S., Ex'r, DECEMBER 15, 1879.

3061

J. S. L'AMOREAUX.      A. C. DAKE.      SETH WHALEN.

LAW OFFICE OF L'AMOREAUX, DAKE, & WHALEN.

BALISTON SPA, N.Y.,

December 6, 1879.

MARCUS P. NORTON, Esq.

*Dear Sir,* — Your favor received: am very busy now, our court being in session, and will continue

through next week. As soon as I can, will look for  
3062 papers as requested.

Yours respectfully,

J. S. L'AMOREAUX.

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[Envelope]

**Complainant's Exhibit L'Amoreaux,**

J. A. S., EX'R, DECEMBER 15, 1879.

3063

If not called for in ten days return to  
L'AMOREAUX, DAKE, & WHALEN, *Counselors at Law*,  
Ballston Spa, N.Y.

[STAMP]

BALLSTON SPA, Dec. 8, 1873.

MARCUS P. NORTON, Esq.,

*Counsellor, &c.,*

Metropolitan Hotel, New York City, N.Y.

8064

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**Complainant's Exhibit L'Amoreaux,  
No. 2,**

J. A. S., EX'R, DECEMBER 17, 1879.

J. S. L'AMOREAUX.

A. C. DAKE.

SETH WHALEN.

LAW OFFICE OF L'AMOREAUX, DAKE, & WHALEN.

3065

BALLSTON SPA, N.Y.,  
December 16, 1879.

MARCUS P. NORTON, Esq.

*My dear Sir,* — All our exhibits, as I understand,  
were left with Commissioner Lamport. Have been to  
Waterford. Can find none. I regret we cannot com-  
ply with your request. Should do so if in our power.

Very truly yours,

J. S. L'AMOREAUX.

3066

**Complainant's Exhibit "Troy Daily Times,"**

J. A. S., EX'R, DECEMBER 15, 1879.

"TROY DAILY TIMES," TROY, N.Y.,  
December 8, 1879.

MR. NORTON.

*Dear Sir,*—Mr. Tucker refers your request to me  
3067 for reply.

In July last a letter came addressed to Mr. Tucker, asking that all exhibits, etc., in Button case, be sent you by express. I immediately packed *all* papers, memoranda, drawings, etc., belonging to you, and which had been placed in our safe for safe keeping, and expressed to address given in the letter, "No. 7 Bowdoin Square." We have no papers whatever in *our* hands belonging to you. Hoping you will be able to find the missing documents and secure a judg-  
3068 ment in your favor, I beg to remain,

Very truly yours,

W. B. WILSON.

[Envelope]  
**Complainant's Exhibit "Troy Daily Times,"**

J. A. S., EX'R, DECEMBER 15, 1879.

3069

TROY DAILY TIMES,  
Troy, N.Y.  
Return in five days.

[STAMP]

TROY, N.Y., Dec. 9, 1879.

HON. M. P. NORTON,

*Metropolitan Hotel,*

3070

New York.

**Defendants' Exhibit Norton,**

J. A. S., Ex'r, DECEMBER 15, 1879.

**ORDER OF THE COMMISSIONER OF PATENTS REFUSING TO RECOGNIZE MARCUS P. NORTON AS A PATENT AGENT.**

3071

UNITED STATES PATENT OFFICE,  
September 18, 1871.

The following charges were, on or about the day of their date, served upon Marcus P. Norton of Troy, N. Y., a patent agent practising before the United States Patent Office: to wit,—

UNITED STATES PATENT OFFICE,  
Washington, D.C., August 29, 1871.

3072 To MARCUS P. NORTON, Troy, N.Y.

*Sir*,— You are hereby notified to appear before the Commissioner of Patents at his Office in Washington, District of Columbia, on the eighth day of September, 1871, at ten o'clock A.M., and show cause, if any exist, why the said Commissioner of Patents (by virtue of the authority conferred upon him by the seventeenth section of the Act of Congress, approved July 8, 1871, and entitled "An Act to revise, consolidate, and amend the statutes relating to patents and copyrights") should not refuse longer to recognize you as a patent agent, it being alleged that you have been guilty of "gross misconduct," more particularly with reference to the matters hereafter named: viz.,—

3073

1st, That said Marcus P. Norton, having, on the twentieth day of October, 1853, filed in the United States Patent Office a certain caveat dated "Troy Conference Academy, West Poughkeepsie, N. Y., October 13, 1853," a copy of which is hereto attached and marked "Exhibit A." That some time after filing said paper

3074

marked "Exhibit A," he, the said Marcus P. Norton, surreptitiously conveyed to the files of this Office a

certain other paper, a copy of which is hereto attached and marked "Exhibit B," as a subjoined description to said caveat, which said "Exhibit B" purports to have been written August 7, 1854; and the said Marcus P. Norton is herewith charged and accused of writing said paper marked "Exhibit B" at a much later date than the said August 7, 1854.

3075 2d, That the said Marcus P. Norton is hereby charged and accused of gross misconduct for having, without authority from this Office, and without filing said paper Exhibit B, placed it among the files of this Office with the intention to deceive and practise fraud upon this Office.

3076 3d, That the said Marcus P. Norton, acting for himself and in behalf of his own interest in a certain case wherein he was interested, in letters-patent upon a certain "Railroad Printing-Press," did surreptitiously take and remove from the files in said case, in said Patent Office, a certain paper dated "Tinmouth, Vt., August 21, 1855," a copy of which is hereto attached, and marked "Exhibit C." Said paper marked "Exhibit C" was received and filed in said Patent Office, as appears by indorsement August 25, 1855.

3077 4th, That the said Marcus P. Norton is hereby charged with purloining from said files, in said Patent Office, said paper or letter marked "Exhibit C," and attaching thereto a certain other paper, a copy of which is hereto attached and marked "Exhibit D," intending  
3078 thereby to deceive and practise gross fraud upon this Office. That said paper, Exhibit D, purports to have been written and signed by Marcus P. Norton on the said 21st of August, 1855, which paper, marked "Exhibit D," said Norton is hereby charged with writing and surreptitiously placing among the files at a much later date than said August 25, 1855, while, in fact, said paper marked "Exhibit D" was never duly filed in this Office, but was attached by said Marcus P. Norton to said letter or paper marked "Exhibit C," said letter  
3078 marked "Exhibit C" having been duly received and filed in the Patent Office August 25, 1855, thus practising gross fraud and deception upon this Office, and under-

taking and intending to impress upon this Office that said paper marked "Exhibit D" was duly filed August 25, 1855, in said Patent Office.

5th, That said Marcus P. Norton did, on the fifteenth day of August, 1871, file in this Office a false and fraudulent paper, a copy of which is hereto attached, and marked "Exhibit E," in which he alleges that he  
 3079 never did make any assignment to F. G. Ransford and Peter Low, dated May 2, 1859; and that if any such is on file in this Office, or has been recorded in Liber G, p. 78, of Transfer of Patents, "is in error," and is "a gross fraud and a forgery;" and that said paper was duly received and filed in this Office on said fifteenth day of August, 1871, and sworn to by Marcus P. Norton before T. C. Connolly, a justice of the peace of the city and county of Washington, D.C.

6th, That the said Marcus P. Norton, acting for him-  
 3080 self and in his own behalf, and in order to defeat the rights of other parties, — viz., F. G. Ransford and Peter Low, — did write, utter, and publish a certain paper, a copy of which is hereto attached and marked "Exhibit F;" that said paper purports to have been written July 20, 1859, and signed by F. G. Ransford and P. Low, and witnessed by R. G. Fox and Thomas H. Hardman; that said Marcus P. Norton is hereby charged (on or about July or August, 1871) with writing, publishing, and forging said paper marked "Exhibit F," and of  
 3081 forging the names of said F. G. Ransford and P. Low, the pretended assignors, as well as the names of R. G. Fox and Thomas H. Hardman, witnesses to said assignment.

7th, That said Marcus P. Norton filed in the United States Patent Office, in person, said paper marked "Exhibit F," as the original paper or assignment for record in said Office, on the twenty-second day of August, 1871; and claimed said paper marked "Exhibit F" was an original paper duly executed by said F. G. Ransford  
 3082 and P. Low, and duly witnessed by said R. G. Fox and Thomas H. Hardman, intending thereby to practise gross deception upon this Office.

8th, That the said Marcus P. Norton is hereby



charged with forging the signatures of F. G. Ransford and P. Low, the assignors, as well as with forging the names or signatures of R. G. Fox and Thomas H. Hardman, the witnesses to said paper or assignment, marked "Exhibit F," and presenting the same for record in said Patent Office,—to wit, said paper marked "Exhibit F,"

3083 —and presenting it as a genuine and true paper or assignment for record, on said August 22, 1871, all of which he did in defiance of the rights of said assignors,—viz., F. G. Ransford and P. Low; and the said Marcus P. Norton was and is guilty of gross misconduct as a patent attorney or agent, and is unworthy of the confidence or respect of the United States Patent Office.

M. D. LEGGETT,  
*Commissioner.*

3084

[Copies of the exhibits were served on Mr. Norton; but, being voluminous, are omitted here.]

By the request of the attorney of said Marcus P. Norton, the hearing in the matter of the above charges was postponed until September 14, at ten o'clock A.M.

Understanding that Mr. Norton was fearful the Commissioner would not do him exact justice, he was informed that, if agreeable to his wishes, a commission of three gentlemen connected with the Patent Office  
3085 would be appointed to hear and investigate the charges, and to report their findings to the Commissioner. He expressed his satisfaction with such arrangement, provided he might designate persons whom he did not want on the commission. He was granted such privilege, whereupon Examiners T. C. Connolly, Ellis Spear, and C. M. Parks were appointed such commission. At the time to which said case had been postponed, said Marcus P. Norton appeared before the commission, and was assisted in his defence by two  
3086 able attorneys. He pleaded "not guilty" to all the charges. Over two days were occupied in the hearing. The report of the commission is as follows: to wit,—

UNITED STATES PATENT OFFICE,  
September 18, 1871.

*Sir,* — We, the undersigned, having been appointed a commission to investigate certain charges made  
3087 against Marcus P. Norton, a practising attorney before the United States Patent Office, by order dated September 14, 1871, have carefully investigated said charges, examined the papers and witnesses in the case, and heard the arguments of counsel on both sides, and respectfully submit the following report : —

We find that the accused, Marcus P. Norton, is, —

- Of the first charge, guilty.
- Of the second charge, guilty.
- 3088 Of the third charge, not guilty.
- Of the fourth charge, guilty, except of the words "purloining from said files" . . . said papers, &c.
- Of the fifth charge, guilty.
- Of the sixth charge, guilty.
- Of the seventh charge, guilty.
- Of the eighth charge, guilty.
- All of which is respectfully submitted.

3089 T. C. CONNOLLY, }  
ELLIS SPEAR, } *Commission.*  
C. M. PARKS, }

Hon. M. D. LEGGETT,  
*Commissioner of Patents.*

It is therefore adjudged, —

- I. That said Marcus P. Norton has been guilty of such "gross misconduct" as to make it the duty of the Commissioner of Patents to refuse longer to recognize him as a patent agent; and it is accordingly ordered, by virtue of the authority conferred upon the Commis-
- 3090 sioner of Patents under the 17th section of the Act approved July 8, 1870, that the said Marcus P. Norton, or any firm of which he shall be a continued member, after said firm shall have been notified of this order, be hereafter excluded from practising before the Patent Office in any and all cases.

II. In view of the fact that said Marcus P. Norton is also an inventor, and frequently appears in his own behalf in prosecuting applications for patents, extensions, interferences, &c., and whereas it having been clearly  
 3091 proven in this case that he is an unsuitable person to be trusted with the files in this Office, it is further ordered that hereafter said Marcus P. Norton shall not be permitted to have personal access to any of the files, drawings, or models in the Patent Office for any purpose whatever. When necessary, in the transaction of business connected with his own personal interests, to know the contents of documents on file in the Office, he must call for certified copies, or make examination by attorney.

3092 III. The Examiners and other employés of the Patent Office will take cognizance of and enforce the above orders.

M. D. LEGGETT,

*Commissioner of Patents.*

Approved:

C. DELANO,

*Secretary of the Interior.*

3093

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**Complainant's Exhibit Norton No. 22,**

J. A. S., Ex'r, DECEMBER 17, 1879.

THE U. S. PATENT OFFICE.

3094 *To all persons to whom these presents shall come,  
 Greeting:*

This is to certify that the annexed is a true copy from the Files of this Office of the File Wrapper and Contents and Drawings in the matter of the application of Marcus P. Norton and C. A. Haskins, filed October 15, 1857, for "Hand Printing Stamp."

8095 [SEAL] **In testimony whereof**, I, J. M. Thacher, Acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this nineteenth day of October, in the year of our Lord one thousand eight hundred and seventy-two, and of the Independence of the United States the ninety-seventh.

J. M. THACHER,  
*Acting Commissioner.*

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8069 NEW YORK, Oct. 13, 1857.

*Hon. Com'r of Patents:*

SIR, — Enclosed I send a withdrawal and receipt of \$20.00 in the application for a patent for R. R. Chairs, also the Treasurer's receipt for \$10.00, which will complete the fee in the application for a patent for "*Hand Printing Stamp*" by myself and C. A. Haskins, forwarded this day per express.

8097 In the matter of the R. R. Chair, we have concluded to make another application under some alterations from the present form, as the office have already hinted, previous to the examination, that it would be rejected.

Your obedient servant,

MARCUS P. NORTON,  
Troy, N. Y.

8098 P. S. — Since writing the above I have endeavored to exchange Troy money for gold, but in vain. I will send \$10.00 in gold upon my return from here to Troy to-morrow.

MARCUS P. NORTON.

[ENDORSED.]

Received and filed October 15, 1857, R. S. G.

*To the Hon. Commissioner of Patents:*

The petition of Marcus P. Norton of Troy, N. Y., and C. A. Haskins of New York, in the County of  
8099 New York, and State of N. Y., respectfully represents:

That your petitioners have invented a new and improved Hand Printing Stamp, with self-inking reservoir and date-changing apparatus, which they verily believe has not been known or used prior to the invention thereof by your petitioners. They therefore pray that letters-patent of the United States may be granted them therefor, vesting in them and their legal representatives the exclusive right to the same, upon  
8100 the terms and conditions expressed in the Act of Congress in that case made and provided, they having paid (\$30.00) thirty dollars into the Treasury, and complied with the other provisions of the said Act.

And your petitioners do hereby appoint Marcus P. Norton of Troy, Rensselaer County, State of New York, their attorney, and authorize him to alter or modify the within specification and claim as he may deem expedient, and receive their patent, and also to receive back any moneys which they may be entitled  
8101 to withdraw, and to receipt for the same.

MARCUS P. NORTON.  
C. A. HASKINS.

*County of New York, State of New York, ss.:*

On this thirteenth day of October, A. D. 1857, before me, the subscriber, a Commissioner of Deeds, personally appeared the within named Marcus P. Norton and C. A. Haskins, and made solemn oath,  
8102 according to law, that they verily believe themselves to be the original and first inventors of the within described new and improved Hand Stamp, and that they do not know or believe the same was ever before known or used, and that they are citizens of the United States.

EDWARD A. FRASER,  
*Commissioner of Deeds, New York.*

## SPECIFICATION.

8103 *To all whom it may concern:*

Be it known that I, Marcus P. Norton of Troy, N. Y., and C. A. Haskins of New York, in the County of New York, and State of New York, have invented a new and improved Hand Printing Stamp, with self-inking reservoir and date-changing apparatus, and we do hereby declare that the following is a full and exact description of the nature, construction, and operation thereof, reference being had to the accompanying drawings, and to the letters of reference marked there-

8104 on. We describe our invention in the following manner, to wit:

- 1st. The Nature,
- 2d. The Construction,
- 3d. The Operation, and
- 4th. The Claim,

which we draw out of and base upon the said nature, construction, and operation.

## NATURE OF THE INVENTION.

8105 The nature of our invention consists in making a hand stamp with a reservoir and self-inking roller, the reservoir being upon the inside of said roller, and contains ink for from six months to one or more years. It also consists in a chase, hereafter to be described, which will admit of different forms of type to the same machine without alteration in it. It also consists in the passing of the roller over the type by the downward motion of the same, and the restoration of said roller to its proper place by means of a spring and

8106 frame hereafter to be described. It also consists in a set of wheels governed by an index pointer for changing the month and day of the month, also the manner of attaching to form so as to give the month and day of the month required without taking away the form or resetting of the type. It also consists in constructing a wheel with type thereon for the use of banks, so

that by the same wheel or die banks may stamp upon notes, checks, bills of exchange, etc., any endorsement required, all of which is done by one machine and at  
 3107 one transaction, if required. It also consists in arranging the machine so that postmasters may print way-bills upon the outside of envelopes or otherwise, a form of which may be seen in the drawings.

#### CONSTRUCTION.

We construct our invention in the following manner, to wit: Fig. 1 is a perspective view; fig. 2 is a side view of the type wheels for the month and day of the month; fig. 3 is a sectional view of the type  
 3108 wheels, also of the index for each; fig. 4 is a reverse view of the form for way-bills, and showing the month and day of the month in the same, ready to use for an impression; it also shows a part of the said type wheels; fig. 5 shows the reservoir inking roller, with the cloth upon one part, while at the other may be seen a representation of ink, also the passages of the ink from said reservoir to the outside covering of cloth or other substance which will distribute the ink upon the type. At fig. 1 (*m*) shows a recess in the bottom  
 8109 of the plate upon which the impression is made. (*n n*) also shows a recess for the purpose of receiving some kind of elastic substance to prevent an injury to the type when the impression is given. (*m''*) shows the stem of the frame (*l*) which holds upon the arm (*ff*) the roller-frame. (*e e* and *n'*) is a thumb-screw. (*q*) is a flat spring fastened in the arm (*ff*). (*m'*) shows the head of the impression rod (*a*), which part of the rod is made larger than at (*h*), which is for the purpose of holding the coiled spring at dotted lines (*o o o*)  
 3110 in the tube (*g'*). (*d*) is a guide-pin passing in the groove (*b*) and stops the rod (*a*) at (*c*). (*l*) is the stem of the frame holding the type wheels, and is secured in (*h*) by the thumb-screw (*j*). (*A* and *B*) represent the frame holding the type wheels. (*k*) is the index pointer which moves the day of the month wheel, which wheel is held in its proper place (*k' k*)

- by the pin (*h*), said pointer is held upon the shaft (*s*) by the nut (*v*). (*c* and *f*), fig. 3, are the same as (*k* and *h*), fig. 1, only they are to move the month wheel.
- 3111 (*y*), fig. 1, shows the type form secured by the pins (*c' c'*) and the thumb-screw (*c'*). (*r*) is the reservoir inking roller resting in the frame (*e e*) at (*a a*). (*w*) shows the place where the ink is received in the roller, and is also the stop. The figures and initial for the month and day of the month are shown — figs. 1 and 3, (*c* and *c'*), fig. 2 shows the screws holding the chase to the index and frame for type wheels (*c' c*). Fig. 1 is the head of the ink roller, which contains its bearings (*a'*). Fig. 3 is the head or stop of the shaft
- 3112 (*a* and *s*). At fig. 6 (*w*) is the bearing screwed into the head (*b' b'*), which is for the purpose of securing the ink within the roller (*r*) and at which place the said ink is admitted into said roller. The passages are represented at the small dots in the part of the roller not shown with cloth upon it. The type wheels may be disconnected from (*h*), fig. 1, by means of the thumb-screw (*j*), which part is seen at fig. 3, and in its place may be put a chase, which shall be fastened by the same screw, and which may receive any form
- 3113 of type required. The upper part of the frame may swing from over the plate (*n n*) so as to stamp a large package of letters as they may be upon the desk or table. The self-inking roller, being made hollow, will hold ink sufficient for any length of time from one day to ten or more years, and will thereby always be ready for use. The type wheels are of the same size each to each; one has twelve sides for the respective months, while the other has thirty-one for the respective days of each month. Said wheels move upon a
- 3114 shaft independent of each other, also of the form of type used. We also use a wheel for bank purposes, and which contains as many sides for type as may be used or required by the bank using the same. For banks we use as many different rollers as they require different kinds of ink, which rollers may be so arranged as to bring into use the kind of ink required.



Each roller contains a *different* color of ink. It also may be done by a variegated roller. The cylinder for the day of the month may be made in two wheels, 8115 which shall number from one to nine, and a blank which could then number ninety-nine, and any number less. The two wheels would be smaller and *exactly* alike. All the wheels would then be less in diameter, and might all be operated by one index. The type upon the said wheels are dovetailed in the periphery of the same, or may be soldered upon the outmost part of them, or the wheels may be cast at one time with type complete, at the circular end of the form. Fig. 4 may operate a wheel which shall give the num- 8116 ber of letters and their value in each respective envelope.

#### OPERATION.

By pressing upon the head (*m''*) the type or form is carried down to make an impression, and as it thus goes down the inking roller passes over it, distributing ink upon the type. The type or form is returned to its former place by the coiled spring (*o o o*) in the cylinder (*g'*), fig. 1. At the same time the inking 8117 reservoir is returned by the flat spring (*g*) upon the lower end of which rests the cross-bar of the frame (*e e* and *c*). To change the month the pointer (*e'* and *f'*) is moved one space; so to change the day of the month the pointer (*k* and *h*) is moved one space, as seen at (*k*). This operation brings the type for month and day thereof in their proper position for an impression, as seen at fig 4. The form (*y*) may be removed and another take its place by the thumb-screw (*c'*), fig. 3, being loosened, etc. The reservoir inking roller, 8118 fig. 5, is covered with cloth or any other substance that will allow the ink to distribute through and upon it. One, two, or more thicknesses may be used, as the case may require. The ink is admitted to the reservoir by taking out the screw (*w*). When the chamber is full then the said screw is returned to its proper place, and when so returned forms one of the

bearings of said roller. The said roller may be taken out at pleasure, as seen at (*o o*), fig. 1. When the index for month and day of month are set to their right place, they are or may be strongly secured there by the screw (*v*) on the shaft (*s*). Each index operates separate and independent of each other. Any required form may be used, as hereinbefore explained. The index (*k'* and *c*) may be made upon the respective wheels, and the frame (*H B*) lessened in size and weight.

## CLAIM.

We do not claim the passing of the ink roller over the type (*y*) by the downward motion of the same. Nor do we claim printing words or figures by means of a wheel or cylinder. But what we do claim, and desire to secure by letters-patent, is,

*First.* The self-inking reservoir roller, as herein described.

*Second.* The arrangement of the month and day of month wheel upon one shaft, combined with and operated by the pointers and indexes, and the arrangement of the form (*y*) in the chase, independent of and giving an impression with the initials and figures of the respective type wheels, as herein substantially set forth.

MARCUS P. NORTON.  
C. A. HASKINS.

Witnesses —

EDWARD A. FRASER.  
WM. F. FRASER.

3122

[ENDORSED.]

Received and filed Oct. 15, 1857, A. S. G.

U. S. PATENT OFFICE,  
Nov. 18, 1857.

3123 GENTLEMEN: — Your application for letters-patent for a Hand Printing Stamp has been considered and rejected.

The device presented under your first claim is found in E. E. Barrett's improvement in printing presses, patented July 21, 1857. Its equivalent obtains also in L. Bailey's hand stamp, patented March 3, 1857. The contrivances embraced under your second claim have likewise been anticipated. See T. J. W. Robertson's improved hand stamp, patented September 22, 3124 1857, and Richard Walker's book paging machine, for which a patent was refused December 12, 1855.

Respectfully, etc.

MESSRS. M. P. NORTON and C. A. HASKINS,  
Care of  
M. P. NORTON, ESQ., Troy, New York.

[ENDORSED.]

Brief letter V. M. P. Norton and C. A. Haskins.  
3125 Hand Printing Stamp. Nov. 18, 1857. — Rhodes.

NEW YORK, Nov. 23, 1857.

*To the Commissioner of Patents,*

Washington, D. C. :

DEAR SIR, — Will you be so kind as to inform me if Mr. Marcus P. Norton and Peter Low of Troy, N. Y., have forwarded to your department the desired amount 3126 of money for the procuring of a letter-patent of a *reservoir* date-changing hand stamp, which stamp and drawings were sent to your department on or about the 27th or 28th of October last. My agreements with those parties were that they were to furnish the money for the procuring of the patent of the same.

I cannot get the satisfaction from them that I desire.

I therefore appeal to you for this information. They say that they have entered a caveat some time since, and paid the amount, \$20.00, and have since sent  
 3127 the balance of money required for the procuring of the patent. If they have not sent the balance, or *any part*, you will confer a great favor by answering this by return of mail, if possible.

P. S. — Please to address me at 23 Scammel Street, New York.

Yours respectfully,

C. A. HASKINS.

[ENDORSED.]

3128 C. A. Haskins. Answered and filed Nov. 27, '57.

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PATENT OFFICE DEPARTMENT.

Business for Marcus P. Norton and C. A. Haskins, of Troy and New York.

Application for a patent for "Hand Printing Stamp."  
 (Pending.)

3129 Caveat enclosed. Dated 1855.

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*To the Hon Commissioner of Patents:*

SIR, — In accordance with a power of attorney given me by M. P. Norton of Troy, and C. A. Haskins of New York, County of New York, and State of New York, I do hereby withdraw their application for a patent for an improvement in "Hand Printing Stamp,"  
 3130 now in your office, and request that (\$20.00) twenty dollars may be returned to my office by mail, agreeable to the provision of the Act of Congress authorizing such withdrawal.

MARCUS P. NORTON,  
*Attorney for Applicants.*

Dated at Troy, N. Y., Nov. 23, 1857.

Nov. 23, 1857.

*Hon. Commissioner of Patents,*  
Washington, D. C. :

3131 SIR, — Enclosed you will please find withdrawal and receipt in the above entitled case.

Your obedient servant,

MARCUS P. NORTON.

[ENDORSED.]

With'al, etc. Filed Nov. 24, '57.

3132 437 Peale.

No.

M. P. Norton and C. A. Haskins,  
Of Troy, New York,  
County of “  
State of “

Hand Printing Stamp,

Received October 15, 1857.

3133 Petition “ “ “

Affidavit “ “ “

Specification “ “ “

2 Drawings “ “ “

Model “ “ “

Cert. dep. with'al to appt.

Cash \$20, Octr. 15, 1857.

Examined 10, Nov. 16, 1857.

2 Issue, cash by mail to M. P. Norton, Att'y, Nov. 25, 1857.

3134 3 Patented

Recorded vol. , page .

Duplicate drawing sent to M. P. Norton,  
May 10th, 1858.

P.

M. P. NORTON,  
Troy, N. Y.

[ENDORSED.]

Exd., L. P. H. Rej. Nov. 18, 1857.

8185

**Sherwood's Affidavit attached to  
Norton's Caveat,**

J. A. S., Ex'r, DECEMBER 17, 1879.

UNITED STATES CIRCUIT COURT,

SOUTHERN DISTRICT OF NEW YORK.

IN EQUITY.

3136

THOMAS J. W. ROBERTSON

vs.

THE SECOMBE MANUFACTURING COMPANY.

*Northern District of New York, County of Rensselaer, ss.:*

Cyrus A. Sherwood, of the city of Troy, in said county, being by me duly sworn, doth depose and say: That on the nineteenth day of March, 1872, he made  
3137 a deposition before John T. Lamport, a United States Commissioner, in which, among other things, deponent stated that during the construction of a certain model therein described, he was aided in the construction of the same by means of certain copies of a caveat then on file in the Patent Office as deponent was informed by Marcus P. Norton, and believes the same to be true, and for a more full statement of the same, deponent refers to that deposition.

Deponent further says that he has carefully read the  
3138 certified copy of caveat hereto annexed and marked "Exhibit B, Norton," and dated June 21, 1855, for "Railroad Ticket Printing Press," and especially so the additional paper therein contained and dated "Tinnmouth, Vt., August 21st, 1855," and signed "Marcus P. Norton," and deponent believes the same to be a true and faithful copy of the additional description paper from which deponent was aided in the construction of the model mentioned in two former depositions dated respectively "March 19th, and April 5th, 1872."

3139 The said additional description paper in the certified copy of the caveat hereto annexed, contains the same identical invention as is represented by the said model.

Deponent further says that the certified copy of the caveat above referred to, was certified by M. D. Leggett, Commissioner of Patents, on the twenty-second day of August, 1871, as will appear by reference to the certificate thereof of said Commissioner of Patents.

CYRUS A. SHERWOOD,

3140 Subscribed and sworn to before me  
this fifth day of April, 1872.

[SEAL]

A. D. LYON,  
*Notary Public, Troy, N. Y.*

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**Complainant's Exhibit Norton's  
Caveat,**

3141 Dated June 21, 1855.

J. A. S., Ex'r, DECEMBER 17, 1879.

THE U. S. PATENT OFFICE.

*To all persons to whom these presents shall come,  
Greeting:*

This is to certify, that the annexed is a true copy from the files of this office, of the *caveat* of M. P. Norton, *filed June 21, 1855*, for "Railroad Ticket

3142 Printing Press."

In testimony whereof, I, M. D. Leggett, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this twenty-second day of August, in the year of our Lord one thousand eight hundred and seventy-one, and of the Independence of the United States the ninety-sixth.

[SEAL]

3143

M. D. LEGGETT,  
*Commissioner.*

*To the Commissioner of Patents:*

The petition of Marcus P. Norton of Tinmouth, in the county of Rutland, and State of Vermont, respectfully represents:

That he has made certain improvements in a machine for the purpose of printing Railroad Tickets, which is called the "*Railroad Ticket Printing Press*," and that he now is engaged in making experiments for the  
 3144 purpose of perfecting the same preparatory to his applying for *letters-patent* therefor. He therefore prays that the subjoined description of his invention may be filed as a *caveat* in the confidential archives of the Patent Office, agreeably to the provisions of the Act of Congress in that case made and provided; he having paid into the Treasury of the United States, twenty dollars, and otherwise complied with the requirements of the said act.

MARCUS P. NORTON.

3145 TINMOUTH, VT., June 4, 1855.

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*Subjoined Description of Railroad Ticket Printing Press.*

My invention consists of a machine for the purpose of printing and cutting railroad tickets, cards, etc. A frame is made of iron, and in shape sufficient to contain the machinery for the above purpose. A semi-cylinder is made stationary at or near the bottom of  
 3146 the frame; on the surface of said cylinder passes the inking rollers, which are moved over its entire surface by the rotation of a crank hereafter described. A square bar passes up through said cylinder in its highest part. In the upper end of this bar the form of type is made fast by sliding into a dovetail groove, so as to admit of different forms of type for the purpose of printing tickets or cards for different stations on the line of railway. The form or forms thus secure is  
 3147 moved up and down by means of a cam revolving in the semi-cylinder, or by a toggle-joint lever working



in the aforesaid cylinder. It is moved up for the purpose of giving the impression, and down to ink the type. When the form is brought down by the cam or toggle-joint lever it is on a line with the surface of the said cylinder; then the inking rollers pass over it and ink the type; then, by working the machine, it moves up and leaves the desired impression on the under side of the paper, which is under the impression plate. The cam in the cylinder is made fast to a shaft extending under the said cylinder. At one end the said shaft there is a cog-wheel, geared with a cog-wheel on the shaft, which holds the crank moving the inking rollers; said cog-wheels are made of a size required, so as to let the ink rollers pass over the type when the form is at rest, and to let the form move up to give the impression when the inking rollers are brought to the extreme end of the semi-cylinder by the roller-crank. In the cog-wheel upon the crank-shaft there are cogs left out, for the purpose of letting the form of type remain at rest when the inking rollers pass over to ink the type. At one end of the said roller-crank shaft the driving power is applied. Over the semi-cylinder passes a part of the frame, through which passes the type in its upward and downward motions, and into which slides the required form, held fast by means of a dovetail groove. Said form is made of iron and steel. The upper part is made to conform to or with the impression plate, thus forming a shear-box for the purpose of cutting the ticket or card the required size. Over this shear-box is an impression plate, with an india-rubber face, made the exact size of the shear-box below. The said plate is made to rise and fall by means of a crank attached to a shaft below, and connected by crank-rod with said plate. The said plate moves up to let the sheet of paper pass under, which, when done, moves down into the shear-box, cuts the ticket or card and remains at rest while the impression is given. The paper is fed to the machine in sheets, and is cut into the required size, one at a time, then printed. In the said shear-box there are two springs.

- extending the whole length of the said box, and on opposite sides ; one is placed higher than the other, so as to take off the printed ticket or card as the form of type moves down to receive ink. Said springs give back so as to let the type pass up to give the impression. After the impression is given, the aforesaid impression plate moves back to its place. The said plate remains at rest while the impression is being given, by the omission of cogs in the proper place of the
- 3152 upper cog-wheel to correspond to the omission in the cog-wheel below governing the form of type. At the extreme line of the semi-cylinder, and upon each side, there is a reservoir for ink, under which are distributing rollers if required, made to revolve by being attached to some part or parts of the machine. The form of ticket is made like the one hereafter annexed. The name of the road, the name of the town where the ticket was sold, the day of the month and year when sold, and name of town to which it
- 3153 is sold, are stereotype plates, made of an exact size to fit each place respectively, and held there by means of dovetail grooves. The word Clarendon, for example, is drawn out, and Rutland, of the same size, is inserted. The word Rutland, at one end of the ticket, is drawn out, and Clarendon, of the same size, is inserted ; then you have a ticket from Clarendon to Rutland, the reverse of the present form. Then take out the day of month and put in the required date, change the month and year in the same manner when required.
- 3154 In the same manner as above described, all the different towns are changed upon the line of the road. For printing coupon tickets, remove the shear-box and impression plates, and put in the coupon form and impression plate, which is done by drawing the said form out of the aforesaid dovetail groove, and sliding the coupon form into the same place. The coupon form is made of any of the other forms, as the case may require, all of which are put in dovetail grooves in a plate of the required length.

3155

*The Object of the Press.*

1st. To save the trouble and expense for railroad companies of getting tickets printed at common printing offices, also to save so many forms as required now.

2nd. To print the ticket with the day of the month on which it is sold, and for which it is good.

3rd. To have the Ticket Clerk print the ticket or tickets when called for, and distribute them along the line of the road, the day previous to the sale ; or,

4th. To have a press in each ticket office along the road, and print the ticket or tickets when sold.

MARCUS P. NORTON.

3157

RUTLAND.	Western Vermont Rail Road.	June 4, 1855.
	<b>CLARENDON.</b>	
	Geo. R. Weed.	

*Rutland County and State of Vermont, ss. :*

On this eleventh day of June, 1855, before me, the subscriber, a Justice of the Peace, personally appeared the within named Marcus P. Norton, and made solemn oath that he verily believes himself to be the original and first inventor of the manner herein described for printing and cutting Railroad Tickets, and that he does not know or believe the same was ever known or used, and that he is a citizen of the United States.

Dated at Tinmouth on this eleventh day of June, 1855.

GEORGE CAPRON, JR.,  
*Justice of the Peace.*

Examined, M. A. O

[ENDORSED.]

3159 Received and filed June 21, 1855, S. T. Shugart.

August 10, 1870.

*Hon. Commissioner of Patents:*

SIR,— Please have made for me certified copy of file wrapper and contents thereof, of my *caveat* upon "R. R. Ticket Printing Press," filed June 21, 1855.

I want two copies of these papers, certified in two separate packets.

MARCUS P. NORTON.

3160

*Additional Paper to Railroad Printing Press.*

TINMOUTH, VT., Aug. 21, 1855.

*Hon. Commissioner of Patents:*

SIR,— I wish to file this paper as an additional *caveat* description to my Railroad Printing Press, now on file, under date of June 4, 1855, and sworn to the eleventh day of June, 1855.

- 3161 I propose to make the form of type as I have described in my *caveat*, or make a cylinder of sufficient size to contain upon its surface or periphery the name (in stereotype) of the name of stations on the line of road in order as they are on said road; this I call the cylinder of towns to where tickets are sold; this cylinder is placed into the form and made to revolve at the will of the operator. There is another cylinder of the same form like unto the other, and this is called cylinder from which the tickets were sold. The
- 3162 name of the road and all other printed matter to be done, may be done by cylinders constructed for that purpose, or stationary type may be used for all, excepting for the month, the day of the month, and the year, which will be done by cylinders made for that purpose. At one end of each cylinder there is an index for each cylinder, and a pointer connected with the cylinder revolves the same to where it may be desired to use the same, where it is then held by the use of a pin and spring. The operator moves these cylinders to and
- 3163 fro from whatever name or date he wishes to sell and

date tickets for use on the railroad. This press is chiefly designed to be used in the General Ticket Office by the General Ticket Master or his clerks, or it may be used in any office on the line of the road where printing and dating is desired. The said cylinders when moved to their respective places, are held fast by a spring connected with the pointer and governed or regulated by the indexes, as will more fully appear herein. I now set forth a series of revolving

3164 type wheels or cylinders for printing certain matter on railroads, but I also intend such wheels to do all kinds of printing required in any office other than the printing the name of towns on railway line with the date of the selling of the tickets, all of which is done by means of suitable cylinders for that purpose. I now deem it best to give a more full description of the dating wheels, and it is substantially as follows: I make two wheels, or more if necessary, and on the circumference or periphery of which I have the required type

3165 arranged so as to print the several months in the year, and on another cylinder or wheel I have arranged the type to print the day of the month. There may also be a type for the years, so that several years may be printed when desired, from the type put on a wheel in same manner as for the month and day of the month. These wheels or cylinders containing such type as may be desired to print from, and put and arranged on a central shaft or other good bracing or turning point, and the printing surface is brought

3166 together on a line or in a suitable form when the month, the day of the month, and the year, with any other matter connected with the same are printed by a blow of the instrument arranged to give the impression. It may be used as a hand printing or stamping device for dating anything desired to have the date printed or formed thereon. This would be very convenient, for then there would be no type to lose, for all the dates would be on the cylinders, from which the same may easily and readily be set or arranged to print the

3167 correct date.

The dating cylinders may be of any size that will answer the purpose required. The day of the month wheel may be made of such size as to require two wheels in order to give the correct dates and to reduce the size of the wheels or cylinders. In that case one wheel would have figures 1, 2, 3, on the periphery of the same, while on the wheel to correspond to the same there would be on the periphery the figures 1, 2, 3, 4, 5, 6, 7, 8, 9, and a (0) or cipher.

3168 These, when changed, will give any date required. It will now be seen that the correct date is given from and by type wheels or revolving and changing cylinders or disks.

The letters or type may be cast on the periphery of such wheels, or formed in slips or pieces and soldered upon the periphery of the wheel desired, or they may be engraved on the same.

Or they may be swedged, formed, or pressed thereon out of the same circumference or periphery, or they  
3169 may be so constructed as to be dovetailed therein. There are various other ways for forming or constructing on such wheels such letters or figures as may be required. The wheels or cylinders may be made of malleable cast iron, or of other cast metal, or made of brass or similar metal. Brass would be the better metal to use when the letters or figures are to be engraved, or swedged, or raised, or pressed, or formed thereon, because it would work more easy and make better work.

3170 Stereotyped letters and figures can be made and then soldered on such circumference surface of such wheels. I think the best way will be to dovetail them in, because when worn out a new one can be put in its place, as it would require expensive machinery to cast a press form, or swedge the letters or figures on said circumference or periphery of such type and dating wheels or cylinder.

To ink the said wheels or type cylinders when arranged for printing and dating, I pass an ordinary  
3171 inking roller over the face or surface of all the type to

be printed from, and then it is returned to its proper place. This roller is passed over a suitable distributing surface, which is for the purpose of getting the ink on the type wheels more evenly, and thus make a better impression on the paper to be printed and dated.

These wheels are each operated in a suitable form or chase constructed for that purpose. To set them each in proper condition or order for the date, and as  
 3172 a matter of convenience, I use a pointer or arm of any suitable construction, and secure the same to the shaft of the type wheel or the wheel itself, and then I have indexes on the frame or on the respective type wheel, so arranged as to enable the operator to put the right month, day of the month, or year, etc., into the printing line or surface, so that the same will print the date required. These indexes will be of any suitable construction, and engraved, stamped, or otherwise put upon the said type-wheel framework, or upon each  
 3173 wheel as may be best, and in such manner that the operator may readily see the same, so as to know how to govern the setting of the wheels in order to print correctly the matter desired.

These wheels or cylinders are held in their fixed position by a small pin having a suitable spring attached, which may be in the arm or pointer, or in the said framework, and extending into the respective wheels having a corresponding hole or opening for the spring to pass into to hold it.

3174 The spring is to hold the pin in its place, so that the wheel cannot move when in its fixed position and in use. By moving any one of the type wheels or cylinders forward to change its use, either to change the month or the day of the month or the year, the pin will be forced into a corresponding opening by the spring, and thus held until another change is had, so the operation will continue. Words or figures may be used to index or represent the month, and may be on the side of the wheel or on the frame holding the type  
 3175 wheels on their shaft, and will of course always be so

constructed as to be in sight the most convenient. This will apply to all the wheels or cylinders for printing the month, the day of the month, or the year. So, too, if any cylinder be used to print any other matter, the same may have an index to correspond to the matter to be printed.

The said dating type wheels may be in a fixed frame and the impression taken from the top by any suitable device to give the force or blow thereon, and the ink-  
 3176 ing roller made to pass over the top in any good and convenient way, or the said type dating wheels and frame in which the same operate may be so arranged as to give a striking-like blow by the hand, or put into a frame on a stem and be forced down upon the paper and then brought back by a spring.

I am having a machine made with these improvements in, and hope to apply for a patent within the *caveat* year; yet there are some other improvements I propose to make in this machine as a whole. The  
 3177 machine may be used for banks, railroad companies, business firms, and in post offices.

Respectfully, your obedient servant,

MARCUS P. NORTON.

Ex'd, V. E. L.

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TINMOUTH, VT., Aug. 21, 1855.

*Commissioner of Patents:*

Will you please send me the 2d part of your Report of 1854?

3178 Can I make application for a patent (on my caveat) for post office way-bill printing and folding machine, at two different times? the caveat has expired. I wish to make application on the folding part *first*, as the whole machine will be subject to *two* patents or applications. If I can apply for one at a time, can the caveat fee be applied on *that* one application?

Respectfully, your obedient servant,

MARCUS P. NORTON.

3179

[ENDORSED.]

Received and filed August 25, 1855, S. T. Shugert.



August 5, 1871.

*I hereby consent that Mr. Robertson have a duly certified copy of my caveat herein named.*

MARCUS P. NORTON.

*Please furnish a certified copy of the file and contents of caveat of Marcus P. Norton for Railway Ticket*  
3180 *Printing Press, dated June 21, 1855.*

T. J. W. ROBERTSON.

File and Contents caveat, see Aug. 5, 1871.

*Great Haste.*

APPLIED Mar. 21, 1857.

### CAVEAT.

	No.
3181	M. P. Norton, Of Tinmouth, County of Rutland, State of Vermont, <i>R. R. Ticket Printing Press.</i> <i>Rec'd June 21, 1855,</i> Petition, " " Affidavit, " " • Specification, " " Drawing,
3182	Model, Cert. dep., 1 <i>Cash \$20, June 21, 1855,</i> Examined, Issue, Patented, 185, 3 Recorded vol. page Ex'd, R. W.

3183

**Complainant's Exhibit File Wrapper  
and Contents of Norton's Letters-  
Patent of January 14, 1862.**

J. A. S., Ex'r, DECEMBER 17, 1879.

THE UNITED STATES PATENT OFFICE.

3184 *To all persons to whom these presents shall come,  
Greeting:*

This is to certify that the annexed is a true copy from the files of this Office of the File Wrapper and Contents in the matter of letters-patent granted Marcus P. Norton, Assignor to self and Charles Eddy & Co., dated January 14, 1862, No. 34,184, for "Hand Stamps for Post Office."

3185 *In testimony whereof, I, J. M. Thacher,*  
Acting Commissioner of Patents, have  
caused the seal of the Patent Office to be  
hereunto affixed this nineteenth day of  
[SEAL] October, in the year of our Lord one  
thousand eight hundred and seventy-two,  
and of the Independence of the United  
States the ninety-seventh.

J. M. THACHER,  
*Acting Commissioner.*

3186 *To the Hon. Commissioner of Patents:*

The petition of Marcus P. Norton, of city of Troy, in the county of Rensselaer, and State of New York.

3187 Respectfully represents that your petitioner has invented new and useful improvements in Post Office Post-Marking Hand Stamps, which he verily believes has not been known or used prior to the invention thereof by your petitioner. He therefore prays that letters-patent of the United States may be granted him therefor, vesting in him and his legal representatives the exclusive right to the same, upon the terms and

conditions expressed in the Act of Congress, and all amendments thereof, in that case made and provided; he having paid (\$15) fifteen dollars into the Treasury of the United States, and complied with other provisions of the said act, and the several amendments thereof.

3188 And your petitioner does hereby constitute and appoint Marcus P. Norton of Troy, county of Rensselaer, State of New York, his attorney, and fully authorize and empower him to alter or modify the within Specification and Claim as he may deem proper, expedient, and in conformity to law, and the decision or decisions of the Hon. Commissioner of Patents, hereby recognizing and confirming all that his said attorney may lawfully do or perform in relation thereto, and also to receive his letters patent when granted.

MARCUS P. NORTON.

Witness :

WARREN K. SOUTHWICK.

3189

*City of Troy, County of Rensselaer, State of New York, ss. :*

3190 On this third day of August, A. D. 1861, before me, the subscriber, a Commissioner of Deeds, personally appeared the within named Marcus P. Norton, and being sworn according to law, says that he verily believes himself to be the original and first inventor of the within described new and improved Post Office Post-Marking Hand Stamp; that he does not know or believe the same was ever before known or used; that he is a citizen of the United States.

MARCUS P. NORTON.

Subscribed and sworn to before me,  
on the day, month, and year first  
above written.

FRANK SCOTT,

*Commissioner of Deeds,*

3191

Troy, N. Y.

*To all whom it may concern:*

Be it known that I, Marcus P. Norton, of the city of Troy, county of Rensselaer, and State of New York, have invented new and useful improvements in "Post Office Post-Marking Hand Stamps," and I do hereby declare that the following is a full and exact description of the nature, construction, and operation thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, and

3192 making a part of this specification.

Fig. 1 is a perspective view. Fig. 2 shows a division of the entire hand stamp, vertically through the centre. Fig. 3 shows the face of the stationary form of type (*DD*), and each of the cylinder type as in a condition ready to give an impression in print upon an envelope, railroad ticket, letter, package, or anything else desired. Fig. 4 shows the channel or groove for the cast type as shown in Fig. 5.

*Like letters represent and refer to like parts.*

3191 The nature of my invention consists in constructing, combining, and arranging a hand stamp, hereinafter described, so as to contain a cylinder with initials of each and every month in the year, and two other cylinders with figures for the respective days of each and every month, also a cylinder with figures or characters to represent ten successive years, more or less, as the case may be, and which cylinders shall each and all revolve upon the *same shaft* and *within* a stationary form of type, and thereby *print* the month, the day of

3194 the month, and the year, in connection with each, and each in connection *with*, and at the same time *of* the printing of the subject matter upon the aforesaid stationary form of type.

It also consists in constructing a ring or stationary type holder with a dovetail channel or groove, so that the name of any town required may be set therein, together with the initials of any State required, and when thus arranged, are then and there firmly secured ready for use.

3195 It also further consists in firmly securing and fasten-

ing each and every of the aforesaid cylinders in their respective places, as and where adjusted, by the means hereinafter described. The respective parts are so arranged as to render them easily cleaned and readily adjusted to their proper and required places, also easily repaired or replaced when worn out. By arranging and combining each and every part required to post-mark any letter or envelope, in the manner and form hereinafter described and set forth, there

3196 will be no liability or possibility of any part thereof being lost while being transmitted in the mails, or being lost at the post office or elsewhere where the same may be required, or transmitted, unless the *entire* stamp be lost. This stamp is more convenient for postmasters and others using it, on account of its being easily and readily adjusted to the month, day of the month, and to the year, and requiring not as much care to look after the various parts as now required by other stamps. It occupies much less room in the mail-

3197 bags while being transmitted to its place of destination. It takes less time, trouble, and expense to prepare it for such transmission.

All the difficulties attending the efficient and successful use of the present hand stamps for post-marking letters as now used by the Government, are fully and completely overcome by the use of this stamp.

Each and every part containing letters or figures, may be cast in a mould made expressly for that purpose, which parts, when in their respective places, are ready

3198 for use without any engraving thereon.

The letters or figures may be *cast, chilled, or case-hardened*, thereby making them cheaper than if made of wrought iron or steel, although they *may* be made of such or other material, and engraved if desired. This stamp may be used by railroad companies for the purpose of dating tickets, etc., etc., and may be also used by banks for any purpose there required. It may be used whenever and wherever desired, when and where it may be.

3199 To enable others, skilled in the art, to make and

to use my invention, I will now proceed to describe the construction and operation thereof.

I construct my Post Office Post-Marking Hand Stamp as follows, to wit :

(A) Fig. 1 is the handle, and is also seen at fig. 2, and is also made of wood ; (B) is the frame to receive and hold type wheels or cylinders (a, b, c, d), also the stationary form (D D). This frame is made of malleable cast iron, and is cast in a mould to give the desired form or shape ; (a) is the type cylinder containing initials for each and every month in the year, and is cast in a mould made *expressly* for the purpose of making such cylinder and letters thereon ready for use. This mould is made in six, twelve, or more parts, so that it may be drawn from said cylinder when cast ; (b) is a cylinder of the same diameter of (a), and contains the numerals 1, 2, 3, which are the only ones required upon the cylinder, to give in connection with the cylinder (c) the respective days of each month as may be required.

This cylinder is made in the same way and manner as the cylinder (a) ; (C) is another type cylinder of the same diameter as (a and b), and contains the numerals 1, 2, 3, 4, 5, 6, 7, 8, 9, and a (0) or cipher. This cylinder, in connection with cylinder (b), will give any day in any month desired, and is made in the same way and manner as the cylinder (a b), and is placed in close proximity to the cylinder (b) ; (d) is another type cylinder of the same diameter as the cylinders (a, b, c), and contains figures, an abridgment for ten successive years, and is made in the same way and manner as each of the aforesaid cylinders.

These cylinders are each and all arranged upon the shaft (c) fig. 2, and are made fast in the required place of each by the screw (F) upon one end of the said shaft (C). This shaft (C) has a shoulder or stop upon the end opposite of the said screw, which shoulder bears directly against the cylinder (a), and the said cylinder (a) against the cylinder (b), and the cylinder (b) against the cylinder (c), and the cylinder

(c) against the cylinder (d), and the cylinder (d) against that part of the frame (B), having therein the female part of the said screw (F). By moving the said shaft (C) each cylinder is drawn against the other next adjoining, as aforesaid, thereby holding each cylinder by the friction of the cylinder or cylinders next thereto. The shaft (C) has a bearing of greater diameter at one end thereof than at the other end. This is for the purpose as hereinbefore described.

- 3204 The said stationary form (D D) may be made in a circle or any other shape desired, which shall contain the name of post office, where used, and the initials of the State where such post office may be located, or any other matter may be therein contained as the case may require. It is made of any required thickness, and has an inside and an outside ring or circle around the said type, representing the name of the town or post office where used, etc., etc. It may be *cast, chilled, case-hardened*, or otherwise constructed, in the same manner
- 3205 as the aforesaid type cylinders; but the cheapest, best, and most convenient way or manner to construct it is shown at fig. 4, where (e) represents or shows a channel or groove down and in the said ring (D D). This channel or groove is cut from one-fourth to three-eighths of an inch in depth, or more or less as may be found necessary.

- It is cut square down with the inner ring, while the side next to the outer ring is cut "dovetailing," thus making the said channel or groove wider at the bottom
- 3206 than at the top thereof. This is to hold any type set therein in the proper place for each, and in condition for printing, etc., as aforesaid. At (f) is an opening so as to receive the type, as shown at fig. 5. This groove is also shown at fig. 2 in said form (D). When the type, as required for any name of any town or post office, are placed in the said channel or groove, through the said opening (f), then the remaining channel or groove is filled up with blocks or "spaces" of the same or other material than the said type, which
- 3207 prevent any type from coming out of the said channel

or groove. When the said form, as shown at fig. 4, is placed within the frame (*B*) figs. 1 and 2, then the opening (*f*) is closed up by means thereof. When the type, as shown at fig. 6, are placed in the channel or groove (*e*) fig. 4, the face of said form, and the face of the said type are upon a line with each, and thereby give an impression in print, even, and at the same time and operation. The said type are cast in a mould as required, to fit the said channel or groove.

3208 By this arrangement there will be no engraving required, nor any setting up of form for the purpose of casting from, for the respective post offices, towns, States, railroad stations, names of railroads, etc., for such can be set from a font of such type made on purpose and kept at the "Post Office Department" or elsewhere, and set up in the said channel or grooves as aforesaid. The form (*DD*) figs. 1, 2, and 4, is fitted into the lower part of the frame (*B*), and there firmly fastened by means of the screws (*EE*) figs. 1 and 2.

3209 There is a mortice or opening *in* and *through* the aforesaid form (*DD*), for the purpose of receiving the aforesaid cylinders (*a, b, c, d*), whereby the printing surface of the same are upon a *direct* and *even* line of and with the aforesaid stationary form of type (*DD*), so as to give an equal impression in print, each with each.

The aforesaid type or cylinders (*a, b, c, d*), revolve upon the shaft (*C*) within the said form of type (*DD*), and the printing surface of each are then and always  
3210 upon a line with each other, whereby the desired impression in print and in ink is given. The frame (*B*) may be screwed or fastened to the handle (*A*), in any manner deemed best.

This stamp can be made at much less expense than any other kind of stamp or stamps for the same use and purpose, and is much more convenient, and is not as liable to get out of repair. No part of it can well be lost unless the entire stamp is lost, which is to be considered in the transmission of post-marking stamps  
3211 through the mails, for now there are so many separate



and disconnected members or pieces, that they are liable to, and in very many instances, *are* lost in such transmissions and at post offices where used, which are expensive and often inconvenient to replace.

It is more easily adjusted for use, and can be kept in repair at much less expense than any other stamp for the same use and purpose. Any other matter required to be printed upon envelopes, letters, etc., etc., at any post office, or at any railroad station, or any bank, etc.,  
 3212 etc., may be done in the same way and manner, by preparing type expressly therefor upon one, two, or more cylinders, to revolve in such stationary form.

Having thus described the nature and the construction of my hand stamp aforesaid, I will now proceed to describe its operation, which is simple and easy to be understood.

The cylinder (*A*) for the month revolves upon the shaft (*C*), and is brought into any required position on a line with the printing surface of the stationary  
 3213 type, or form (*D D*) and there remains, and during the months for which it is set or fixed, which, when the month is ended, is then moved forward for the next month in succession, and so the operation is continued until the year is completed, when the same operation is again repeated. The cylinder (*b*) is moved forward one figure every ten days during any month or year. The cylinder (*c*) is moved forward one figure every day of the week, month, and year. The cylinder (*d*) is moved forward one figure every  
 3214 year during the term of ten years, when a *new* cylinder is put in its place to answer to the *next ten* successive years, and so on the operation continues without limitation. By the use of these cylinders as herein described, any year, month, and day of the month of any year may be given and printed, while at the same time the name of the town, post office, railroad station, bank, etc., etc., is given as aforesaid.

When each of the aforesaid cylinders is adjusted to its proper place as desired, it is there firmly held by  
 3215 turning the shaft (*C*), which, by means of the said

screw thereon, will then bring each cylinder against the other next adjoining thereto, and the side of cylinder (*d*) against the frame (*B*), in the manner and form as hereinbefore described. The impression is made upon the envelope, letter, package, or whatever desired, by giving a downward and striking motion thereon. And so the operation continues for post-marking letters or any thing else desired, by the use of this stamp.

- 3216 This stamp may be made any size and strength desired. Any part thereof can easily be replaced, whenever for any purpose it may be required.

Having thus set forth and described my invention, what I claim and desire to secure by *letters-patent* of the *United States*, is, the combination of four cylinders (*a, b, c, d*) upon the shaft (*C*), with the stationary form of type (*DD*), whereby the *day, month, and year*, are given *together* by *one* impression, substantially as herein described and set forth.

- 3217 I also claim the combination of the shaft (*C*) with *four* cylinders (*a, b, c, d*) thereon arranged, with the frame (*B*), whereby the said cylinders are firmly held in their adjusted position, substantially as herein described and set forth.

In testimony whereof, I have hereunto set my hand in presence of

WARREN C. SOUTHWICK.

S. E. BLAKELY.

3218

MARCUS P. NORTON.

TROY, N. Y., Aug. 3, 1861.

[ENDORSED.]

Specification, etc., Post Office Hand Stamp. Recorded and filed, August 8, 1861, P. E. W. Marcus P. Norton, Troy, N. Y.

3219

PATENT OFFICE, Aug. 22, 1861.

SIR: — Your application for letters-patent for alleged improvements in Hand Stamps, has been examined and the patent is refused.

The first or second sections of your claim have been anticipated by the patent granted to T. J. W. Robertson, Sept. 22, 1857. The last is met by an arrangement substantially equivalent in the patent of E. E. Barrett, granted July 21, 1857. T. R. P.

3220 MARCUS P. NORTON,  
Troy, New York.

[ENDORSED.]

Off. Aug. 22, 1861.

Office of MARCUS P. NORTON,  
*Attorney and Counsellor-at-Law.*  
TROY, N. Y., Aug. 28, 1861.

3221 *Hon. Commissioner of Patents:*

SIR, — In reply to your letter of the 22d inst., rejecting my application for a patent upon "*Hand Stamps*," etc., I have to say that I claim to be the *original* and *first* inventor of the "*Improvements in Post Office Post-Marking Hand Stamps*," as described in my *specification, drawings, and model*, in the application which you rejected on the 22d of August, 1861, and therefore and thereupon request your Honor to declare an interference with the parties named in your letter of rejection, that I may have the opportunity to prove the priority of the invention, upon which you reject my application for a patent.

3222

Yours respectfully,

MARCUS P. NORTON.

[ENDORSED.]

Rej. See Judge Merrick's decision. Appeal, Philip P. Justice, Ass'r to Edwd. Young. June 13, 1859.

M. P. Norton. Asks interference. Received and  
3223 filed, Sept. 5, 1861. T. R. P.

PATENT OFFICE, Sept. 6, 1861.

SIR: — Your letter of the 28th ulto. is just received, and the request for an interference with certain patents referred on the 22d ulto. cannot be granted, both patents having been in existence more than two years, and it is presumed the articles patented have been on public sale.

See Judge Merrick's decision, June 13, 1859, on the appeal of Philip P. Justice, Ass'r to Edw'd Young.

3224

T. R. P.

MARCUS P. NORTON,  
Troy, New York.

[ENDORSED.]

Off., Sept. 6, 1861.

Office of MARCUS P. NORTON,

3225

*Attorney and Counsellor-at-Law.*

TROY, N. Y., Sept. 9, 1861.

*Hon. Commissioner of Patents:*

SIR, — Your letter of the 6th inst. is at hand. In reply I have to say, that I am *morally* and *legally* entitled to the interference asked for in the matter of my application for a patent upon improvements in "*Post Office Hand Stamps*," so far as relates to that part of the invention said to interfere with the patent granted  
3226 to "T. J. W. Robertson," Sept. 22, 1857. The opinion or rule establishing the doctrine, that where a *patent* has been granted for more than *two* years prior to the *application* of another person claiming the same invention, an interference cannot be granted with any chance of success, is, I believe, the doctrine of the law. But my case does not come under such rule, or within that principle of the law. I cannot but believe that there has been an oversight in the examination, which led to such a conclusion, "that the interference asked  
3227 for cannot be granted, etc." I will state the case,

which will most undoubtedly lead to a different conclusion, which is as follows, to wit :

1st. I have a *caveat*, now on file in the *Patent Office*, for the same invention for which Robertson obtained a patent, Sept. 22, 1857, which *caveat* was filed in 1855.

2d. In September, 1857, I filed an application in connection with inking improvements, invented by C. A. Huskins of New York, which were assigned to myself and Peter Low (by assignment), Nov. 16, 3228 1857, in liber P<sup>4</sup>, page 67, of Transfer of Patents, in the *Patent Office*. My application was then rejected upon this same patent of Robertson. Since then the improvements have been separated and left as before the said application.

3d. In the month of May, 1859, I made a new application for a *patent* upon the same invention, with some additional improvements, and on the twenty-seventh day of June, 1859, this application was rejected upon the same patent granted to Robertson, Sept. 22, 1857, 3229 and on the 16th of July following, a re-examination was had, which led to a patent issuing to me, dated Aug. 9, 1859, *under and by reason of an amendment, dated July 20, 1859*, and marked (B), wherein was expressly reserved the right to make the application rejected Aug. 22, 1861.

Here is a succession of applications, *all within two years* of each other, and covering the *same* invention, with *new* specifications, making *three* applications for a patent upon *this* invention, since Robertson's patent 3230 was granted, Sept. 22, 1857. I am now within the rule of the Patent Office, and within the spirit and letter of the law. I have not forfeited my right to a patent upon this invention, but, on the other hand, have preserved it by a succession of applications within two years of each other, the last one being filed Aug. 7, 1861. The decision of Judge Merrick of June 13, 1859, does not therefore apply to this case. I therefore ask that an interference be declared with the patent of Robertson, granted Sept. 22, 1857. The 3231 improvements said to interfere with the patent granted

to Barrett, July 21, 1857, I hereby withdraw from said application.

Hoping that this statement will lead to different conclusions,

I remain, your obedient servant,

MARCUS P. NORTON.

[ENDORSED.]

M. P. Norton. Argument. Received and filed,  
3232 Sept. 14, 1861. T. R. P.

PATENT OFFICE, Sept. 14, 1861.

SIR:—Your argument of the 9th inst., in relation to your rejected application for a Hand Stamp, has been received.

The decisions of the office are still believed to be correct, both in refusing the patent, and also refusing  
3233 the interference, for the following reasons:

1st. *Caveats* are ignored when suffered to expire by limitation. A caveat filed in 1855, should not have been consulted in 1857.

2d. Norton & Haskins' application, rejected Nov. 18, 1857, was withdrawn on the 24th of the same month, two-thirds of the office fee returned to the applicants, and the case thus abandoned without re-examination.

3d. The patent granted to you on the 9th of August,  
3234 1859, was then, as now, believed to cover all that was patentable in the device; your reserving the right to apply for a patent on that which was then refused does not restore the novelty requisite for the issue of a patent.

T. R. P.

MARCUS P. NORTON,  
Troy, New York.

[ENDORSED.]

3235

Off., Sept. 14, 1861.

Office of MARCUS P. NORTON,  
*Attorney and Counsellor-at-Law.*  
 TROY, N. Y., Oct. 8, 1861.

*Hon. Commissioner of Patents:*

SIR,—In the matter of the application of Marcus P. Norton for letters-patent upon "Post Office Hand Stamps," rejected Aug. 22, 1861, I have to request you to send me the specification and drawing.

3236

Respectfully, etc.,

MARCUS P. NORTON.

[ENDORSED.]

Letter from applicant. Filed Oct. 10, 1861.  
 D. C. S. Requesting specification and drawing.

UNITED STATES PATENT OFFICE,  
 WASHINGTON, Oct. 10, 1861.

3237

SIR:—Agreeably to your request of the 8th inst., the Specification and Drawing of your application for letters-patent are herewith returned.

Yours respectfully,

D. P. HOLLOWAY,  
*Commissioner of Patents.*

[ENDORSED.]

Office, Oct. 10, 1861. Returning Specification and  
 3238 Drawing.

Office of MARCUS P. NORTON,  
*Attorney-at-Law, Counsel and Advocate*  
*in Patent Cases.*

TROY, N. Y., Nov. 6, 1862.

*Hon. Commissioner of Patents:*

SIR,—Herewith I enclose you Specification with amendments and argument thereon, in my application  
 3239 for "*letters patent*" upon improvements in "Post-

Marking and Cancelling Stamps," also *renewal oath* in same case, and have to request that the same be taken up immediately upon reaching the files of the *Patent Office*, if you can consistently do so. My reason for this request is founded upon the fact that the Government is desirous of an immediate introduction of these improvements into public or general use. I am not certain that a renewal oath is at all necessary at this stage of the case, but have enclosed it to save  
 3240 delay, in case you should require one. Hoping that my request is not unreasonable,

I remain, your obedient servant,

MARCUS P. NORTON.

[ENDORSED.]

M. P. Norton. Nov. 6, 1862. Sends paper. Received and filed, Nov. 10, 1862. T. R. P.

3241

#### RENEWAL OATH.

*City of Troy, County of Rensselaer, State of New York, ss.:*

On this fourteenth day of October, A. D. 1861, before me, the subscriber, a Commissioner of Deeds, personally appeared Marcus P. Norton, of the city of Troy, county of Rensselaer, and State of New York, and being duly sworn according to law, says that he  
 3242 verily believes himself to be the *original and first* inventor of the new and useful improvements in post office post-marking hand stamp, described and set forth in his specification in his application for letters-patent for and upon said improvements, filed in the U. S. Patent Office on the eighth day of August, 1861, and rejected by the Hon. Commissioner of Patents on the twenty-eighth day of August, 1861; that he does not know or believe the same to have been ever before  
 3243 known or used; that he is a citizen of the United States of America; that this is a second or renewal oath, for



and upon said improvements in said application, as by the specification and amendments thereof the same will more fully appear.

MARCUS P. NORTON.

Subscribed and sworn to before me, on  
the day and year first above written.

FRANK SCOTT,

*Commissioner of Deeds,*

Troy, N. Y.

3244

[ENDORSED.]

Renewal Oath. Filed, Oct. 23, 1861. D. C. S.

#### AMENDMENT A.

*Hon. Commissioner of Patents:*

SIR,—I hereby amend my specification in my application for letters-patent upon improvements in "Post  
3245 Office Post-Marking Hand Stamps," rejected on the twenty-eighth day of August, 1861, by striking therefrom each and every claim thereof, and inserting in place and stead of, the following claims, to wit:

I do not claim the *particular* device patented to T. J. W. Robertson, on the twenty-second day of September, 1857, but what I do claim is, the combination of four cylinders (*a, b, c, d*) upon the shaft (*C*) with the stationary form of type (*DD*), whereby the *day*, *month*, and *year* are given *together* by *one* impression,  
3246 substantially as herein described and set forth.

I also claim the combination of the shaft (*C*) with *four* cylinders (*a, b, c, d*) thereon arranged, with the frame (*B*), whereby the said cylinders are firmly held in their adjusted position, substantially as herein described and set forth.

MARCUS P. NORTON.

[ENDORSED.]

No. 1. Amendment A. Filed Oct. 23, 1861. D.  
3247 C. S. Patent, Jan. 14, 1862.

*Hon. Commissioner of Patents:*

SIR, — I hereby amend Amendment (A) in my application for *letters-patent* upon improvements in "Post Office Post-Marking Hand Stamp," by inserting the following, to wit:

"I do not claim the *particular* device patented to T. J. W. Robertson, on the twenty-second day of September, 1857, but what I do claim, is".

MARCUS P. NORTON.

3248 WASHINGTON, D. C., Oct. 26, 1861.

[ENDORSED.]

No. 2. Amendment B (of Amendment A). Filed Oct. 26, 1861.

Office of MARCUS P. NORTON,  
*Attorney-at-Law, Counsel and Advocate*  
*in Patent Cases.*

3249

TROY, N. Y., Jan. 15, 1862.

*Hon. Commissioner of Patents:*

SIR, — Some time last month the \$20 fee was paid upon my application for a patent upon P. O. Stamps, etc., ordered to issue in October last. I have not received my patent. Was it issued? if not, when will it issue?

Yours respectfully,

3250

MARCUS P. NORTON.

[ENDORSED.]

Filed Jan. 18, 1862. D. C. S. Patent sent to-day (18th).

No. 34,184.

PEALE.

3251

MARCUS P. NORTON, Ass'or to himself and CHARLES  
EDDY & Co. of TROY:

*County of Rensselaer, State of New York;*

## OATH RENEWED.

## HAND STAMP FOR POST OFFICES.

- Received August 8, 1861.
- 3252    Petition,        "    "    "  
          Affidavit,    "    "    "  
          Specification, "    "    "  
          Drawings,    "    "    "  
          Model,        "    "    "  
          Cert. dep.,  
          1 Cash \$15, Aug. 8, 1861.  
          1 Cash \$20, Dec. 28, 1861.  
          Examined, Oct. 28, 1861. *T. R. Peale.*  
          2 Issue, Oct. 28, 1861.
- 3253    3 Patented, Jan. 14, 1862.  
          Recorded vol. 136, page 554.  
          Cer., Oct. 29, 1861.  
          H<sup>1</sup>, H<sup>6</sup>, 325.
- M. P. NORTON,  
                          Troy, N. Y.
- Misc. of Printing.  
   Rej'd, August 22, 1861.  
   Refused interference, Sept. 6, 1861.  
   Refused interference, Sept. 14, 1861.
- 3254    Specification and Drawing returned, Oct. 10, 1861.

[ENDORSED.]

Hand Stamps for Post Offices.

3255

**Complainant's Exhibit J. D. Green,**

NORTON'S CAVEAT,

J. A. S., EX'R, DECEMBER 17, 1879.

*District of Columbia, County of Washington, ss.:*

- 3256 On this eleventh day of September, A. D. 1871, before me, the undersigned, personally came Jeremiah D. Green, who being duly sworn deposes and says: My name is Jeremiah D. Green; I reside in Troy, N. Y.; I know Marcus P. Norton of Troy, N. Y., and have known him for about sixteen years. I know S. H. Sweatland, Patent Agent of the city of Washington, and have known him for about eighteen years. During the hearing before the Postmaster-General, under a joint resolution of Congress, approved July
- 3257 14, 1870, I appeared as attorney for Frederick G. Ransford, Peter Low, and others, against Marcus P. Norton, claiming for them certain interests in the patent granted April 14, 1863, to said Norton, founding such claim upon and under letters patent granted upon said Norton's application, dated Aug. 9, 1859, and for improvements in post-marking hand stamps. The said Sweatland appeared upon that occasion for Peter Low, Frederick G. Ransford, and others, as their attorney, with me. During that trial, the said Sweat-
- 3258 land produced a certified copy of a caveat dated Oct. 20, 1853, with an additional paper therein, dated Tinmouth, Vt., Aug. 7, 1854: this was Marcus P. Norton's caveat of those dates, for a machine for mailing and folding letters, which certified copy is here produced, and marked "Exhibit A, Norton." This exhibit and caveat copy I obtained of the said S. H. Sweatland during last winter. I understood from Mr. Sweatland that he obtained such copy from the U. S. Patent Office. It is marked in pencil "Sweatland
- 3259 and Co'py," on the certificate thereon. I furnished

the annexed copy to Mr. Norton, at his request, he having learned that such copy was in my possession.

J. D. GREEN.

Subscribed and sworn to before me, this eleventh day of September, A. D. 1871.

CHAS. CONS. CALLAN,  
*Notary Public.*

[SEAL]

3260

**Complainant's Exhibit, U. S. Patent Office,**

J. A. S., Ex'r, DECEMBER 17, 1879.

[ENDORSED.]

EXHIBIT "A" NORTON, SEPT'R 11, 1871.

3261 CHAS. CONS. CALLAN, *Notary Public.* [SEAL]

**THE U. S. PATENT OFFICE.**

*To all persons to whom these presents shall come,  
Greeting:*

This is to certify, that the annexed is a true copy from the files of this office.

[*Sweatland & Co., in pencil.*]

3262

**In testimony whereof,** I, Sam'l A. Duncan, Acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this eighteenth day of January, in the year of our Lord one thousand eight hundred and seventy-one, and of the Independence of the United States the ninety-fifth.

[SEAL]

SAMUEL A. DUNCAN,  
*Acting Commissioner.*

3263

*To the Commissioner of Patents:*

The petition of Marcus P. Norton, of Troy Conference Academy, West Poultney, and County of Rutland, and State of Vermont, respectfully represents:

3264 That he has invented a certain machine for mailing and folding letters in the outside wrapper with their way-bills, and that he is now engaged in making experiments for the purpose of perfecting the same, preparatory to his applying for letters-patent therefor. He therefore prays that the subjoined description of his invention may be filed as a caveat, in the confidential archives of the Patent Office, agreeably to the provisions of the Act of Congress in that case made and provided; he having paid twenty dollars into the Treasury of the United States, and otherwise complied with the requirements of said act.

MARCUS P. NORTON.

TROY CONFERENCE ACADEMY,

3265 WEST POULTNEY, VT., Oct. 13, 1853.

*Subjoined Description.*

My post office stamp and way-bill folding machine is so constructed as to print the name of the town, State, month, and day thereof, also the name of the postmaster, paid 3 cts. and unpaid 5 cts., upon the letter, and to fold the same together with its way-bill in an outside envelope. Said envelope and way-bill  
3266 are made together, and in the form and manner as shown by a plan which I send enclosed.

That part of the machine which stamps the letter consists of a shaft, upon which is placed two arms, crossing each other at right angles, which contain the type in the form as shown upon the way-bill. Upon the same shaft are two *cams*, one at or near each end of the same, which are used to move the continuous or sliding platform (upon which the letter is moved under the type) down so as to let it  
3267 receive an impression from the type. The *platform*

upon which the letter passes under the type is continuous, or to slide under and back as I may deem best upon experimenting. The platform belt is to be moved with the same speed of the type cylinder, by means of a band or its equivalent. The platform plays up and down by means of spiral springs around the guides of said platform, which are four in number. The belt or band is tightened at pleasure by means of movable boxes and screws. The types are to be inked

3268 by means of ink rollers, two in number, placed in such a manner, by means of movable boxes and screws, so as to roll over the face of the type as they pass around. In order to change the motion of the platform belt or slide, two small gears are used, one on the cam and type shaft, the other on the crank shaft. The frame for the entire work is to be made in any form to suit the eye of the mechanic. A pulley is fastened to one of the cams, for the purpose of moving the continuous belt or slide and the ink rollers.

3269 That part for folding the letter with its way-bill in the outside envelope, consists of a small table placed at one end of the stamping part, upon legs. A hole is made through the centre of this table large enough to receive any size letter; around this is made a box containing four folders, which turn upon hinges by means of levers, two of which move at a time only, which fold one half of the envelope, after which the other two move and fold the remaining half; then the bottom of the aforesaid box opens and lets the letter

3270 drop out folded in its way-bill envelope, ready for transportation. The folders are worked by means of levers fastened to them, at the end of which a cord is fastened, which passes up through the table, over pulleys, down through the table, and are fastened to pedals. At the other end of the levers are fastened cords for the purpose of opening the folders when closed. Those cords for opening the folders are worked by means of weights or springs. Having thus described my machine, I will now state its ob-

3271 ject, etc.

*Its object is*

1st. To facilitate mailing and wrapping up letters with their way-bills, etc.

2d. To save the expense of paper for wrapping purposes, lessening the cost about one-half, and saving all of the paper, as now required for way-bills.

3d. To lessen the number of laborers, as now required in large post offices.

Rec'd 2 Oath, written for Oct. 20, 1853.

3272

S. T. S.

*To the Commissioner of Patents:*

SIR,—I wish the following to be added to my sub-joined description for mailing and folding letters for which I have a caveat in your office.

In the mailing of letters, I have provided means for post-marking of letters, newspapers, and the like, and for the cancellation of the postage stamps thereon  
 3273 at one and the same blow or operation of the instrument or machine by which the post-mark is had or made upon the letter, envelope, or wrapper, or package, in a plain and intelligible manner and thereby always retaining the same, while the postage stamp or stamps are more effectually and permanently cancelled, so as to prevent frauds upon the revenue derived from the sale and use of such stamps.

The said device is arranged upon the type cylinder contained in first paper filed in my said caveat,  
 3274 between the way-bill form of type, and it gives the impression in ink upon the letter, envelope, or packet by means of the revolving cylinder, and at the same time and operation it also gives a heavy impression *in ink* upon the postage stamp, when or where used upon the said letter or envelope, and the postage stamp becomes thoroughly impregnated with ink by the means herein provided, and therefore it cannot be cleansed by chemical washing or by other means so as to allow of the same being used a second time, and thus frauds  
 3275 are prevented.



If there should be no stamp used for payment of postage on letters, packets, etc., this device would do no sort of harm to the letter, envelope, etc., for it would only post-mark the same with the name of the town and date; such as month, day of the month, and year, and upon one side thereof, at same time, give a heavy impression in ink, which would appear was only intended for cancellation of the postage stamp as aforesaid stated.

3276 This would make a plain and more intelligible post-mark than by the old method now in use, while it would at same time, blow, and operation of the instrument cancel in ink the postage stamp or stamps when such are used, as aforesaid, in a most thorough, perfect, and permanent manner, so that the same could not be cleansed for the purpose of being used a second time.

This part of my invention I construct of the ordinary form of type now used in the post offices for the  
 3277 post-marking of letters with the name of the town, month, day of the month, and the year, etc., and I combine therewith in some good, practical, and suitable manner, a device which I denominate a postage stamp cancelling type, to be used in or with any kind of ink suitable for that purpose, and by such combined instruments, one device is formed which will give the name of post office, month, day of the month, and year, and at same time and blow cancel and thus destroy the postage stamp, thereby greatly economiz-  
 3278 ing in the time now required in the making up of the mail—in fact, saving one-half of the labor required for post-marking and for cancelling of postage stamp when it is desirable to give the impression of name of the town and date upon the envelope, letter, or packet, in order to preserve the same for any purpose of proofs or other thing.

I now think that the best way to make this part of my invention, is to use a cross-bar or cross-piece upon the periphery of the cylinder set forth in other papers  
 3279 in my caveat, and fasten in some suitable manner the

post-marking stamp upon one end thereof, and the postage cancelling type or device upon the other end of said bar or cross-piece, which would of course give *dating* stamp at *one* end, and *cancelling* stamp at the *other* end thereof.

This bar, thus constructed, with said type arranged thereon as aforesaid, is securely fastened to the periphery of said cylinder in some suitable manner. The cancelling type or stamp may be made of iron, steel, 3280 wood, rubber, cork, or of any other suitable material, and the same may be combined with said cross-bar by the drilling of a suitable hole therein, or by a tube to receive the same, and said tube being suitably fastened to said cross-bar; or the same may be fastened directly upon and to the said cross-bar at any required distance from said dating part or dating type. A screw may pass through said cross-bar into the material used for the cancelling type, and thus hold it firmly thereto, or a suitable tube may first be fastened to said cross- 3281 bar, and then the cancelling material or part used for the cancelling type may be inserted therein and thereon; and thereby held until worn out by use, when the same may be replaced.

Rubber or cork, I think, will make *the best* and most suitable cancelling type or device, while soft wood used endwise will make a most excellent cancelling type.

If it should be found impracticable to use the said cylinder and other parts of said machine as contemplated in the *caveat* papers now on file, then the said 3282 cross-piece or bar may be removed from the said type cylinder by means of loosening the screws by which it is fastened thereto, and a suitable handle affixed thereto in place of such cylinder, and the same then used as a hand stamping device for post-marking and cancelling postage stamps.

The said cross-bar may be removed from said cylinder in order to re set the type for the date to be given, or for the purpose of removing and replacing the said cancelling type or stamp, and then the same may be 3283 replaced upon said cylinder as aforesaid.

By means of this device I get a good and more perfect impression upon the letter, envelope, or packet, of the name of the town, day of the month, month, etc., and at the same time and operation, cancel the postage stamp or stamps *in ink* in a most complete, thorough, and perfect manner. When *cork* is used it contains a greater quantity of the ink used, and being somewhat elastic, and somewhat rough upon the face containing the ink, it will to a considerable extent break the  
 3284 enamelled surface of the postage stamp, formed as such by means of the indelible ink used in the manufacture of such stamp so as to form a hard surface, in order that the stamp might not become defaced by transportation to places of sale, while on sale, or while being carried in a person's pocket ready for use, and, having broken somewhat such surface of such postage stamp by the blow of the cork upon the same, the ink impregnates in a most thorough manner the whole postage stamp, and of course it cannot be re-  
 3285 moved without destroying the printed surface of such postage stamp and so defacing it that such efforts at re-use of it would be at once detected.

Soft wood used endwise will have nearly the same effect, so therefore some soft and porous material will be the most suitable to use in the construction of said cancelling type or device used for the cancellation of all postage stamps.

The cam-frame which draws the letters under said type cylinder for post-marking of letters, packets,  
 3286 etc., and for the cancellation of postage stamps thereon, will give the blow against the said post-marking and postage cancelling device, which is done at one operation and at the same time, and when thrown out of gear, then the way-bill printing part may be worked and then print the way-bills, as I have described in former papers on file in my said caveat. I would prefer the use of an indelible ink with my said device or instrument or machine, if the same could be had by all the postmasters who use the said machine, etc.  
 3287 This part of said machine may easily and readily be

converted into a *hand* stamp, when and where no other part of said machine would be used, save and except the post-marking containing the name of the town where used, the month and day of the month and year, etc., and the postage stamp cancellor or cancelling device attached to and combined with the said cross-bar or cross-piece substantially as aforesaid, with a suitable handle at the centre of said cross bar or piece, or at some suitable place between the two stamping  
 3288 devices aforesaid, which handle is used for the giving of the blow or impression of the two devices attached to said cross-bar as aforesaid, and of course it would then be a simple device of post-marking stamp, of cross-bar, and cork, rubber, or wood (or other suitable material) postage stamp cancelling device combined thus into one instrument, and operated by the handle with one blow, and to be used in or with any kind of ink desired. One blow of the instrument in the hand of the operator will do the printing of the  
 3289 name of the town, of the month, of the day of the month, upon the letter or envelope, and the cancellation of the postage stamp in a most complete and effectual manner substantially as aforesaid — thereby saving great labor, and the re-handling over of the letters in order to post-mark them, and afterwards to cancel the postage stamps when it is desired to have an intelligible post-mark preserved on the letter or envelope, and to have the postage stamp thoroughly cancelled so as to prevent frauds by the re-use of the  
 3290 same, as is often now the case.

This instrument will therefore prevent such frauds and very much simplify and economize in the time for the making up of the mails for transportation. This will be the effect and result if no other part of said machine be used, save the said parts converted into a simple hand stamp as aforesaid, to wit: The post-marking part, the postage stamp cancelling part, all attached to the said cross-bar and combined therewith as and in the manner aforesaid. If the entire machine  
 3291 set forth in all the caveat papers be used, there will be

great saving of labor and time in mailing of letters, and a large quantity of paper, twine, and sealing-wax, etc., by the use set forth in all the papers of this caveat. There would be also great labor saved as aforesaid, by the use of such hand stamp combined as aforesaid.

I am having a full-size machine made according to my caveat papers, which, when done, I shall apply for a patent, or at least as soon thereafter as I may be  
 3292 able to get the Post Office Department to consider and adopt for use in the various post offices my said improvements, or some parts thereof, preferring to submit the same to the judgment of that department before applying for my patent upon the invention herein contained.

I desire you to file this with my other papers in my said caveat. I intend to renew my *caveat* if such be at all necessary in order to protect my rights while engaged in efforts with the Post Office Department for  
 3293 the general use of my invention, and especially that part which relates to the hand stamp form of post-marking and postage stamp cancelling combined with and upon a cross bar or piece containing a suitable handle substantially as aforesaid, so as to give *both* impressions at one blow and operation of the instrument as aforesaid, thereby saving great labor and preventing frauds, etc.

MARCUS P. NORTON.

TINMOUTH, VT., Aug. 7, 1854.

3294

Ex'd, V. E. L.

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*Applied March 21, 1857.*

CAVEAT.

No.

Marcus P. Norton.

Of West Poultney,

3295 County of Rutland,  
 State of Vermont,

*Mach. for Mailing and Folding Letters.*

Rec'd Oct. 20, 1853,  
 Petition " "  
 Affidavit, Oct. 27, 1853,  
 Specification, Oct. 20, 1853,  
 Drawing,  
 Model,  
 Cert. dep.,

- 3296 1 Cash, \$20, Oct. 20, 1853,  
 2 Examined,  
 Issue  
 3 Patented, , 185,  
 Recorded vol., page,

S. H. HODGES,  
*Attorney.*

Paper within.

Ex'd R. W.

3297 [ENDORSED.]

Complainant's Exhibit — J. D. Green,

Norton's Caveat,

J. G. POMERENE, *Special Examiner*,

June 7, 1878,

also

3298 Complainant's Exhibit — U. S. Patent Office,

J. G. POMERENE, *Special Examiner*,

June 7, 1878.

3299

**Complainant's Exhibit, Norton No. 10,**

J. A. S., EX'R, DECEMBER 17, 1879.

*City and County of Washington, District of Columbia,*  
ss. :

CHAS. CONS. CALLAN, being by me duly sworn, doth depose and say : I am a notary public in and for the said city of Washington and District. I know Marcus P. Norton, of the city of Troy, State of New York, and have known him personally for some years past. On the morning of the twenty-second day of August, 1871, at or near nine o'clock in the morning of that day, I was called by said Marcus P. Norton from my office to his room, No. 113, National Hotel, in said city, to administer to him the usual oath to a deposition or an affidavit. I attended at his said room, and there, at or near the time aforesaid, I duly administered to him, the said Marcus P. Norton, a most solemn *oath*, in the manner and form as by law required, after said Norton had signed his name to the affidavit for which I had been called to administer such *oath*. The affidavit then and there signed by said Marcus P. Norton, and for and upon which I administered to him said oath, is hereto attached, and the same is marked by me "Exhibit O, Norton." The same is duly signed by me in my official capacity, and it was duly made and sworn to by said Norton on the morning of Aug. 22, 1871, at about nine o'clock in the morning of that day. The said Marcus P. Norton at that time informed me that he desired to use such affidavit in the Patent Office on that day. That he had thus sent for me to come to his room to administer said oath because he needed all his time to prepare other papers for use in Patent Office on that day, as he desired to facilitate his business in the Patent Office.

Deponent further says, that not having his official seal with him at the room of said Norton, he remarked to said Norton that he, deponent, would take to his office said affidavit so made and hereto annexed,

and would then attach deponent's official seal, to which said Norton replied, "Very well; do so, and on my way to the Patent Office this morning I will call at your office for the same." That this deponent did so take and seal the said affidavit, and said Norton called at deponent's said office for it at or near ten o'clock in the morning of Aug. 22, 1871, and taking the said affidavit, left my office in the direction of the said Patent Office, and at the same time had a  
 3304 bundle of legal papers with him, the contents of which deponent knew not. The said affidavit, hereto annexed and marked as aforesaid, was made by said Marcus P. Norton in due form before me as a *Notary Public*, between nine and ten o'clock on the morning of the twenty-second day of August, 1871, and delivered by me to said Norton when on his way to the U. S. Patent Office same morning as before stated and set forth.

CHAS. CONS. CALLAN.

3305 Subscribed and sworn to before me, this fourteenth day of September, 1871.

[SEAL]

H. CLAY JOHNSON,

*Notary Public.*

J. Q. S.

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**Complainant's Exhibit Norton No. 12,**

J. A. S., Ex'r, DECEMBER 17, 1879.

3306

*City and County of Washington, District of Columbia, ss.:*

Marcus P. Norton, being by me duly sworn, doth depose and say: My name is Marcus P. Norton. In the year 1859 I resided at the city of Troy, in the State of New York. I then and now personally know Frederick G. Ransford and Peter Low, then residing at said city of Troy. During that year I made an agree-  
 3307 ment with them to procure a patent for me upon certain improvements in "Hand Stamps," and according



to the terms thereof I made the application for letters-patent. That application was divided into two applications after examination and rejection of some of the claims thereof. And before the second application was made the said agreement was modified so that a patent should issue for a term of fourteen years, *four* years of which should be held and owned by said Ransford and Low, while deponent should be at liberty to make the second or new application for a patent upon the

3308 improvements for which the several claims had been rejected in the old application. I accordingly made the second application, and a patent was duly granted to me, bearing date the fourteenth day of January, 1862, and which I have now caused to be surrendered for a re-issue, and which has been held by the Examiner in charge to be a part of the application of 1859. Deponent says that the patent of Jan. 14, 1862, was issued in pursuance of the said modified agreement, a true and correct copy of which is hereto annexed

3309 and forming a part hereof, which deponent has first caused to be recorded in the Patent Office for reasons that will herein appear. Deponent further says, that the original agreement, whereof the annexed is a true, correct, and faithful copy, was by him put on file in the U. S. Patent Office, either in the file from which the patent of Jan. 14, 1862, issued, or else in the file from which the patent of Aug. 9, 1859, issued to said Ransford and Low. That said original agreement, of which the annexed copy is a true and correct one as

3310 above stated, cannot now be found in either of said files, to wit, of 1859 and 1861-2. And deponent further says, that the said original agreement so put on file has either been mislaid and lost, or else some one unknown to deponent has abstracted or taken the same from such filing. And deponent further says that he never made and executed such an assignment as that which now appears upon the U. S. Patent Office Records as being dated May 2, 1859, and recorded May 6, 1859, under and by which the patent of

3311 Aug. 9, 1859, issued to said Ransford and Low,

and I now refer to a former affidavit made and sworn to by me and filed in said application for re-issue of said patent of Jan. 14, 1862, but did make an agreement as above stated which gave that device to them for a term of *four* years from the date of the patent. The said agreement hereto annexed was executed and delivered to me for the reasons stated therein, and it was originally prepared by deponent, while the copy hereto annexed has been prepared from  
 3312 an old and worn-out copy not suitable to be put into the Record file for said re-issue of patent of Jan. 14, 1862, but which is a correct copy as hereinbefore stated.

MARCUS P. NORTON.

Subscribed and sworn to on this twenty-second day of August, 1871.

[SEAL]

CHAS. CONS. CALLAN,  
*Notary Public.*

3313 J. Q. S.

[ENDORSED.]

"Exhibit O, Norton."

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**Complainant's Exhibit Norton No. 14,**

J. A. S., EX'R, DECEMBER 17, 1879.

3314

NATIONAL HOTEL, WASHINGTON, D. C.,  
 Aug. 23, 1871.

*Hon. Commissioner of Patents:*

SIR, — In the matter of my application for *re-issue* of my *letters-patent*, dated Jan. 14, 1862, for and upon improvements in "*Post Office Hand Stamps*," and now pending upon a letter of rejection, by which said case *is rejected* upon *letters-patent* granted upon my petition, and dated Aug. 9, 1859, for "*Improve*  
 3315 *ment in Post Office Post-Marking Hand Stamps*," I

herewith present for permanent file in said pending re-issue file, a copy of an original agreement between "Peter Low" and "Frederick G. Ransford" of Troy, N. Y., of and concerning my invention for "type wheel dating and printing stamp." This copy I have first caused to be put upon record, so that, in case of "another loss," there will be something to indicate that there was, and has been, such an agreement in the patented files, and that said letters-patent and the  
 3316 "re-issues" thereof had been duly, properly, and regularly granted to me upon my application.

I also enclose my affidavit of explanation and of verification of said enclosed copy agreement, which I desire to be filed in said re-issue application of said patent of Jan. 14, 1862, with said "copy agreement," it having being first put upon record as the certificate thereof thereon will more fully appear. Upon a case thus made up, to wit: 1st. THE APPLICATION for Re-issue of the patent of Jan. 14, 1862; and 2d, of  
 3317 said RECORDED COPY OF AGREEMENT of Ransford & Low on one part, and Norton upon the other; and 3d, My PERSONAL AFFIDAVIT, explaining and verifying the said copy agreement so recorded, I desire, and I now request and demand an "Interference case" to be made and had, by and between said application for re-issue, and the letters-patent granted to "T. J. W. ROBERTSON," on the twenty-second day of September, 1857, and a certain patent granted upon MARCUS P. NORTON's application for a patent, which is dated Aug. 9,  
 3318 1859. I claim not only to be the lawful inventor of the invention and improvements contained in each and every of these patents, but I also claim to be the lawful owner of the invention and patent, dated Aug. 9, 1859. I desire therefore that you give each party ample time wherein to get ready for the questions and the points at issue, and that each person, to wit, "F. G. Ransford" and "Peter Low" be duly notified of the same, and of the contents of this letter, that each may fully understand what points are at issue in  
 3319 such "INTERFERENCE CASE," and thereby be better

prepared to go on with the same. I would prefer that only 20 DAYS be given to each party to file the preliminary statement required by the rule, and that after that you give 60 DAYS for the taking of testimony. By pursuing the course above indicated, the rights and interests of each one concerned would be more fairly reached.

3320 *Such* an interference would involve questions of PRIORITY of invention, as well as questions of TITLE thereto.

The affidavit of verification more fully explains the RECORD OF COPY AGREEMENT, as well as other matters connected with the same. I would wish to have entered upon the file wrapper the name of the aforesaid named paper, including the date of said recorded paper, and said affidavit. I desire immediate action, as I desire to return to my family *at once*.

Respectfully, etc.,

J. Q. S.

MARCUS P. NORTON.

3321

### **Complainant's Exhibit Norton No. 16,**

J. A. S., EX'R, DECEMBER 17, 1879.

*District of Columbia, County of Washington, ss.:*

On this fourteenth day of September, A. D. 1871, before me personally came Marcus P. Norton, who  
 3322 being duly sworn according to law, deposes and says, that the within letter was by him prepared on the day of the date thereof, and on that day he took the same to the Patent Office with him, together with the affidavit subscribed and sworn to on the twenty-second day of August, 1871, by him, and marked "Exhibit O," and attached to the affidavit of Chas. Cons. Callan, expecting there to receive the copy agreement which he had offered for record on the previous day, as a copy, and immediately thereafter he intended to file  
 3323 this letter, the said affidavit, and recorded copy

agreement between himself and F. G. Ransford and Peter Low, in his pending application for re-issue, and thereupon ask an interference as stated within.

MARCUS P. NORTON.

Subscribed and sworn to before me, this fourteenth day of September, A. D. 1871.

CHAS. CONS. CALLAN,

[SEAL]

*Notary Public.*

3324

**Complainant's Exhibit Norton No. 18,**

J. A. S., Ex'r, DECEMBER 17, 1879.

DEPARTMENT OF THE INTERIOR,  
PATENT OFFICE,

WASHINGTON, D. C., Aug. 23, 1871.

3325 Until further orders, Marcus P. Norton will not be permitted to examine any papers, look into any files, or transact any business in the Patent Office, except by and through some respectable and accredited attorney.

M. D. LEGGETT,  
*Commissioner Patents.*

3326

**Complainant's Exhibit Norton No. 20,**

J. A. S., Ex'r, DECEMBER, 17, 1879.

UNITED STATES PATENT OFFICE,  
WASHINGTON, D. C., Oct. 22, 1872.

SIR: — In your letter of the 5th inst., calling for copies, you request among others, "duplicates of M. P. Norton's affidavits filed in explanation and defence of charges preferred against him by the Commissioner of Patents," etc. In reply, have to say

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that no such papers were filed by him, his defence being verbal.

The other copies called for have been sent.

Respectfully,

M. D. LEGGETT,

Com'r.

W. W. SECOMBE, Esq.,

No. 7, Park Place, New York City, N. Y.

3328

**Complainant's Exhibit M. D. Leggett,  
Fraud No. 1,**

J. A. S., Ex'r, DECEMBER 17, 1879.

THE UNITED STATES PATENT OFFICE.

3329

*To all persons to whom these presents shall come,  
Greeting:*

This is to certify that the annexed is a true copy of charges preferred against Marcus P. Norton, by the Commissioner of Patents:

In testimony whereof, I, J. M. Thacher, Acting Commissioner of Patents, have caused the seal of the Patent Office to be  
3330 [SEAL] hereunto affixed this fifteenth day of November, in the year of our Lord one thousand eight hundred and seventy, and of the Independence of the United States the eighty-eighth.

J. M. THACHER,  
Acting Commissioner.

Order of the Commissioner of Patents refusing to recognize Marcus P. Norton as a Patent Agent.

3331

UNITED STATES PATENT OFFICE,  
Sept. 18, 1871.

The following charges were, on or about the day of their date, served upon Marcus P. Norton of Troy, N. Y., a patent agent practising before the United States Patent Office, to wit :

UNITED STATES PATENT OFFICE,  
WASHINGTON, D. C., Aug. 29, 1871.

3332

*To Marcus P. Norton, Troy, N. Y. :*

SIR, — You are hereby notified to appear before the Commissioner of Patents, at his office in Washington, D. C., on the eighth day of September, 1871, at 10 o'clock A. M., and show cause, if any exist, why the said Commissioner of Patents (by virtue of the authority conferred upon him by the seventeenth section of the Act of Congress, approved July 8, 1871, and entitled "An Act to revise, consolidate, and  
3333 amend the statutes relating to patents and copyrights") should not refuse longer to recognize you as a patent agent, it being alleged that you have been guilty of "*gross misconduct*," more particularly with reference to the matters hereafter named, viz. :

*First.* That said Marcus P. Norton having, on the twentieth day of October, 1853, filed in the United States Patent Office a certain caveat, dated "Troy Conference Academy, West Poultney, Vermont, October 13, 1853," a copy of which is hereto attached, and  
3334 marked "Exhibit A ;" that some time after filing said paper marked "Exhibit A," he, the said Marcus P. Norton, surreptitiously conveyed to the files of this office a certain other paper, a copy of which is hereto attached, and marked "Exhibit B," as a subjoined description to said caveat, which said "Exhibit B" purports to have been written Aug. 7, 1854, and the said Marcus P. Norton is herewith charged and accused of writing said paper marked "Exhibit B," at a much later date than the said Aug. 7, 1854.

3335 *Second.* The said Marcus P. Norton is hereby

charged and accused of gross misconduct, for having, without authority from this office, and without filing said paper, "Exhibit B," placed it among the files of this office with the intention to deceive and practise fraud upon this office.

*Third.* That the said Marcus P. Norton, acting for himself, and in behalf of his own interest in a certain case wherein he was interested, in letters-patent upon a certain "Railroad Printing Press," did surreptitiously take and remove from the files in said case, in said Patent Office, a certain paper dated "Tinmouth, Vermont, August 21, 1855," a copy of which is hereto attached and marked "Exhibit C." Said paper marked "Exhibit C," was received and filed in said Patent Office, as appears by endorsement, Aug. 25, 1855.

*Fourth.* That the said Marcus P. Norton is hereby charged with purloining from said files in said Patent Office said paper or letter marked "Exhibit C," and attaching thereto a certain other paper, a copy of which is hereto attached, and marked "Exhibit D," intending thereby to deceive and practise gross fraud upon this office. That said paper "Exhibit D" purports to have been written and signed by Marcus P. Norton on the said twenty-first day of August, 1855, which paper marked "Exhibit D" said Norton is hereby charged with writing and surreptitiously placing among the files at a much later date than said Aug. 25, 1855, while, in fact, said paper marked "Exhibit D" was never duly filed in this office, but was attached by said Marcus P. Norton to said letter or paper marked "Exhibit C," said letter marked "Exhibit C" having been duly received and filed in the Patent Office, Aug. 25, 1855, thus practising gross fraud and deception upon this office, and undertaking and intending to impress upon this office that said paper marked "Exhibit D" was duly filed Aug. 25, 1855, in said Patent Office.

*Fifth.* That said Marcus P. Norton did, on the fifteenth day of August, 1871, file in this office a false and fraudulent paper, a copy of which is hereto



attached, and marked "Exhibit E," in which he alleges that he never did make any assignment to F. G. Ransford and Peter Low, dated May 2, 1859, and that if any such is on file in this office, or has been recorded in Liber G, page 73, of Transfer of Patents, "is in error," and is "a gross fraud and a forgery;" and that said paper was duly received and filed in this office on said fifteenth day of August, 1871, and sworn to by Marcus P. Norton, before T. C. Connolly, a  
 3340 Justice of the Peace of the city and county of Washington, D. C.

*Sixth.* That the said Marcus P. Norton, acting for himself and in his own behalf, and in order to defeat the rights of other parties, viz.: F. G. Ransford and Peter Low, did write, utter, and publish a certain paper, a copy of which is hereto attached, and marked "Exhibit F;" that said paper purports to have been written July 20, 1859, and signed by F. G. Ransford and P. Low, and witnessed by R. G. Fox and Thomas  
 3341 H. Hardman; that said Marcus P. Norton is hereby charged (on or about July or August, 1871) with writing, publishing, and forging said paper marked "Exhibit F," and of forging the names of said F. G. Ransford and P. Low, the pretended assignors, as well as the names of R. G. Fox and Thomas H. Hardman, witnesses to said assignment.

*Seventh.* That said Marcus P. Norton filed in the United States Patent Office, in person, said paper marked "Exhibit F," as the original paper or assignment for record in said office, on the twenty-second  
 3342 day of August, 1871, and claimed said paper marked "Exhibit F" was an original paper duly executed by said F. G. Ransford and P. Low, and duly witnessed by said R. G. Fox and Thomas H. Hardman, intending thereby to practise gross deception upon this office.

*Eighth.* That the said Marcus P. Norton is hereby charged with forging the signatures of F. G. Ransford and P. Low, the assignors, as well as with forging the names or signatures of R. G. Fox and Thomas H.  
 3343 Hardman, the witnesses to said paper or assignment

marked "Exhibit F," and presenting the same for record in said Patent Office, to wit: said paper marked "Exhibit F," and presenting it as a genuine and true paper or assignment for record, on said Aug. 22, 1871; all of which he did in defiance of the rights of said assignors, viz.: F. G. Ransford and P. Low; and the said Marcus P. Norton was, and is, guilty of gross misconduct as a patent attorney or agent, and is unworthy of the confidence or respect of the United States Patent Office.

M. D. LEGGETT,  
*Commissioner.*

(Copies of the Exhibits were served on Mr. Norton, but being voluminous, are omitted here.)

By the request of the attorney of said Marcus P. Norton, the hearing in the matter of the above charges was postponed until September 14, at 10 o'clock, A. M. Understanding that Mr. Norton was fearful the Commissioner would not do him exact justice, he was informed that, if agreeable to his wishes, a commission of three gentlemen connected with the Patent Office would be appointed to hear and investigate the charges, and to report their findings to the Commissioner. He expressed his satisfaction with such arrangement, provided he might designate persons whom he did not want on the commission. He was granted such privilege, whereupon Examiners T. C. Connolly, Ellis Spear, and C. M. Parks were appointed such commission. At the time to which said case had been postponed, said Marcus P. Norton appeared before the commission, and was assisted in his defence by two able attorneys. He pleaded "not guilty" to all the charges. Over two days were occupied in the hearing. The report of the commission is as follows, to wit:

UNITED STATES PATENT OFFICE,  
Sept. 18, 1871.

SIR:—We, the undersigned, having been appointed a commission to investigate certain charges made against

Marcus P. Norton, a practising attorney before the United States Patent Office, by order dated Sept. 14, 1871, have carefully investigated said charges, examined the papers and witnesses in the case, and heard the arguments of counsel on both sides, and respectfully submit the following report :

We find that the accused, Marcus P. Norton, is —

Of the first charge, *guilty*.

3348 Of the second charge, *guilty*.

Of the third charge, *not guilty*.

Of the fourth charge, *guilty*, except of the words "purloining from said files," \* \* said papers, etc.

Of the fifth charge, *guilty*.

Of the sixth charge, *guilty*.

Of the seventh charge, *guilty*.

Of the eighth charge, *guilty*.

All of which is respectfully submitted.

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T. C. CONNOLLY,

ELLIS SPEAR,

C. M. PARKS,

*Commission.*

HON. M. D. LEGGETT,

*Commissioner of Patents.*

It is therefore adjudged —

I. That said Marcus P. Norton has been guilty of such "*gross misconduct*" as to make it the duty of the  
3350 Commissioner of Patents to refuse longer to recognize him as a patent agent; and it is accordingly ordered, by virtue of the authority conferred upon the Commissioner of Patents, under the 17th section of the act approved July 8, 1870, that the said Marcus P. Norton, or any firm of which he shall be a continued member, after said firm shall have been notified of this order, be hereafter excluded from practising before the Patent Office, in any and all cases.

II. In view of the fact that said Marcus P. Norton  
3351 is also an inventor, and frequently appears in his own

behalf in prosecuting applications for patents, extensions, interferences, etc. ; and whereas it having been clearly proven in this case that he is an unsuitable person to be trusted with the files in this office, it is further ordered that hereafter said Marcus P. Norton shall not be permitted to have personal access to any of the files, drawings, or models in the Patent Office for any purpose whatever. When necessary, in the transaction of business connected with his own personal interests, to  
 3352 know the contents of documents on file in the office, he must call for certified copies, or make examination by attorney.

III. The Examiners and other employees of the Patent Office will take cognizance of and enforce the above orders.

M. D. LEGGETT,  
*Commissioner of Patents.*

Approved :

C. DELANO,  
 3353 *Secretary of the Interior.*

I hereby certify that the foregoing is a true copy of the Complainant's Exhibit "M. D. Leggett, FRAUD No. 1," filed with me on the 30th of August, 1878, in the cause of Christopher C. Campbell against Thomas L. James, in the United States Circuit Court for the Southern District of New York.

IRVING BROWNE,  
*Special Examiner.*

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**Complainant's Exhibit M. D. Leggett,  
Fraud No. 2,  
(Exhibits C and D),**

J. A. S., Ex'r, DECEMBER 17, 1879,

**DEPARTMENT OF THE INTERIOR, UNITED  
STATES PATENT OFFICE.**

3356

*To all persons to whom these presents shall come,  
Greeting:*

This is to certify that the annexed is a true copy from the files of this office, of *additional papers* found in the caveat file of Marcus P. Norton, filed Oct. 20, 1853, for Machine for Mailing and Folding Letters.

3357

**In testimony whereof, I, Ellis Spear, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this thirteenth day of August, in the year of our Lord one thousand eight hundred and seventy-eight, and of the Independence of the United States the one hundred and third.**

[SEAL]

ELLIS SPEAR,  
Commissioner.

**Exhibit D.**

3358

*Additional Paper to Railroad Printing Press.*

TINMOUTH, VT., Aug. 21, 1855.

*Hon. Commissioner of Patents:*

SIR, — I wish to file this paper as an *additional CAVEAT* description to my Railroad Printing Press now on file under date of June 4, 1855, and sworn to the eleventh day of June, 1855.

I propose to make the form of type as I have de-  
3359 scribed in my caveat, or make a cylinder of sufficient

size to contain upon its surface or periphery the name (in stereotype) of the name of the stations on the line of railroad in the order as they are on said road. This I call the cylinder of towns to where tickets are sold. This cylinder is placed into the form and made to revolve at the will of the operator. There is another cylinder, of the same form, like unto the others, and this is called cylinder from which the tickets were sold. The name of the road, and all other printed matter to

3360 be done, may be done by cylinders constructed for that purpose; or stationary type may be used for all, excepting for the month, the day of the month, and the year, which will be done by cylinders made for that purpose. At one end of each cylinder there is an index for each cylinder, and a pointer connected with the cylinder revolves the same to where it may be desired to use the same, where it is then held by the use of a pin and spring. The operator moves these cylinders to and from whatever name or date he wishes to sell and

3361 date tickets for use on the railroad. This press is chiefly designed to be used in the general ticket office by the general ticket master or his clerks; or it may be used in any office on the line of the road where printing and dating is desired. The said cylinders, when moved to their respective places, are held fast by a spring connected with the pointer, and governed or regulated by the indexes, as will more fully appear herein. I have set forth a series of revolving type wheels or cylinders for printing certain matter on rail-

3362 roads; but I also intend such wheels to do all kinds of printing required in any office other than the printing the names of towns on a railway line, with the date of the selling of the tickets, all of which is done by means of suitable cylinders for that purpose. I have deemed it best to give a more full description of the dating wheels, and it is substantially as follows: I make two wheels, or more if necessary, and on the circumference or periphery of which I have the required type arranged so as to print the several months in the year; and on

3363 another cylinder or wheel I have arranged the type to

print the day of the month. There may also be a type for the years, so that several years may be printed, when desired, from the type, put on a wheel in same manner as for the month and day of the month. These wheels, or cylinders, containing such type as may be desired to print from, are put and arranged on a central shaft, or other good bearing and turning points, and the printing surface is brought together on a line, or in a suitable form, when the month, the day of the

3364 month, and the year, with any other matter connected with the same, are printed by a blow of the instrument, arranged to give the impression. It may be used as a hand printing or stamping device for dating any thing desired to have the date printed or formed thereon. This would be very convenient, for then there would be no type to lose ; for all the dates would be on the cylinder, from which the same may easily and readily be set or arranged to print the correct dates. The dating

3365 cylinders may be of any size that will answer the purpose required. The day of the month wheel may be made of such size as to require two wheels, in order to give the correct dates and to reduce the size of the wheels or cylinders. In that case one wheel would have figures 1, 2, 3, on the periphery of the same, while on the wheel to correspond to the same there would be on the periphery the figures 1, 2, 3, 4, 5, 6, 7, 8, 9, and a 0, or cipher. These, when changed, will give any date required. It will now be seen that the correct date is given from and by type wheels, or revolving

3366 and changing cylinders or disks. The letters or type may be cast on the periphery of such wheels, or formed in slips or pieces and soldered upon the periphery of the wheel desired ; or they may be engraved on the same ; or they may be swedged, formed, or pressed thereon out of the same circumference or periphery ; or they may be so constructed as to be dovetailed therein. There are various other ways for forming or constructing on such wheels, such letters or figures as may be required. The wheels, or cylinders, may be made of

3367 malleable cast iron, or of other cast metal, or made of

brass or similar metal. Brass would be the better metal to use when the letters or figures are to be arranged, or swedged, or raised, or pressed, or formed thereon, because it would work more easy and make better work. Stereotyped letters and figures can be made and then soldered on such circumference surface of such wheels. I think the best way will be to dovetail them in, because when worn out a new one can be put in its place, and it would require expensive machinery to cast or press, form or swedge the letters or figures on said circumference or periphery of such type and dating wheels or cylinders. To ink the said wheels or type cylinders, when arranged for printing and dating, I pass an ordinary inking roller over the face or surface of all the type to be printed from, and then it is returned to its proper place. This roller is passed over a suitable distributing surface, which is for the purpose of getting the ink on the type wheels more evenly, and thus make a better impression on the paper to be printed and dated.

These wheels are each operated in a suitable form or *chase* constructed for that purpose. To set them each in proper condition or order for the date, and as a matter of convenience, I use pointer or arm of any suitable construction, and secure the same to the shaft of the type wheel, or to the wheel itself; and then I have indexes on the frame, or on the respective type wheels, so arranged as to enable the operator to put the right month, day of the month, or year, etc., into the printing line or surface, so that the same will print the date required. These indexes will be of any suitable construction, and engraved, stamped, or otherwise put upon the said type-wheel framework, or upon each wheel, as may be best, and in such manner that the operator may readily see the same, so as to know how to govern the setting of the wheels, in order to print correctly the matter desired. These wheels, or cylinders, are held in their fixed position by a small pin having a suitable spring attached, which may be in the arm or pointer, or in the said framework, and extend-



ing into the respective wheels, having a corresponding hole or opening for the spring to pass into to hold it. The spring is to hold the pin in its place, so that the wheel cannot move when in its fixed position and in use. By moving any one of the type wheels or cylinders forward to change its use, either to change the month, or the day of the month, or the year, the pin will be forced into a corresponding opening by the spring, and there held until another change is had, and  
 3372 so the operation will continue. Words or figures may be used to index or represent the month, and may be on the side of the wheel (or on the frame holding the type wheels on their shaft), and will of course always be so constructed as to be in sight the most convenient. This will apply to all the wheels or cylinders for printing the month, the day of the month, and year: so, too, if any cylinder be used to print any other matter, the same may have an index to correspond to the matter to be printed. The said dating type wheels may be  
 3373 in a fixed frame, and the impression taken from the top by any suitable device to give the force or blow thereon, and the inking roller made to pass over the type in any good and convenient way; or the said type dating wheels, and frame in which the same operate, may be so arranged as to give a striking-like blow by the hand; or put into a frame on a stem and be forced down upon the paper and then brought back by a spring.

I am having a machine made with these improvements in, and hope to apply for a patent within the  
 3374 *caveat* year; yet there are some other improvements I propose to make in this machine as a whole. The machine may be used for banks, railroad companies, business firms, and in post offices.

Respectfully, your obedient servant,

MARCUS P. NORTON.

[ENDORSED.]

Complainant's Exhibit M. D. Leggett, *Fraud No.*  
 3375 2, August 31, 1878. I. B., Ex'r.

This paper, marked Exhibit D, after due notice to M. P. Norton, and trial had before a commission appointed by the Commissioner of Patents, was by the said commission adjudged to be fraudulent, and to have been surreptitiously introduced into the caveat file of M. P. Norton for a Railroad Ticket Printing Press, filed June 21, 1855.

3376 In the order of the Commissioner of Patents dated Sept. 18, 1871, and approved by the Secretary of the Interior, in the case of the trial of M. P. Norton for gross misconduct, see the finding of the commission as to charge 4. This paper does not, therefore, form a valid portion of the above named caveat.

M. D. LEGGETT,  
*Commissioner of Patents.*

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### Exhibit C.

3377 TINMOUTH, VT., Aug. 21, 1855.

*Commissioner of Patents:*

Will you please send me the second part of your report of 1854? Can I make application for a patent (on my caveat) for post office way-bill printing and folding machine at two different times?

The caveat has expired. I wish to make application on the folding part *first*, as the whole machine will be subject to *two* patents or applications. If I can apply for one at the time, can the caveat fee be applied on that  
3378 one application?

Respectfully, your obedient servant,

MARCUS P. NORTON.

Ex'd—S. P. P.

M. Mc. K.

[ENDORSED.]

Complainant's Exhibit M. D. Leggett, Fraud No. 2, August 31, 1878. I. B., Ex'r.

Received and filed August 25, 1855. S. T. Shugert,  
3379 Exhibit C.

This paper (marked Exhibit C, and to which the paper marked Exhibit D is attached) does not pertain to the caveat file of M. P. Norton for a Railroad Ticket Printing Press, filed June 21, 1855, but does pertain to the caveat file of M. P. Norton for a Machine for Mailing and Folding Letters, filed October 20 and 27, 1853. See the endorsement upon the back of *Exhibit D*, hereunto attached.

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M. D. LEGGETT,  
*Commissioner of Patents.*

I hereby certify that the foregoing is a true copy of the Complainant's Exhibit "M. D. Leggett, Fraud No. 2," filed with me on the 31st of August, 1878, in the cause of Christopher C. Campbell against Thomas L. James, in the United States Circuit Court for the Southern District of New York.

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IRVING BROWNE,  
*Special Examiner.*

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**Complainant's Exhibit M. D. Leggett,  
Fraud No. 3,**

J. A. S., Ex'r, DECEMBER 17, 1879.

3382 DEPARTMENT OF THE INTERIOR, UNITED  
STATES PATENT OFFICE.

*To all persons to whom these presents shall come,  
Greeting:*

This is to certify that the annexed is a true copy from the files of this office of additional papers found in the caveat file of Marcus P. Norton, filed Oct. 20, 1853, for Machine for Mailing and Folding Letters.

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**In testimony whereof,** I, Ellis Spear, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this thirteenth day of August, in the year of our Lord one thousand eight hundred and seventy-eight, and of the Independence of the United States the one hundred and third.

ELLIS SPEAR,  
*Commissioner.*

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**“Exhibit B.”**

*To the Commissioner of Patents:*

SIR,—I wish the following to be added to my sub-joined description for mailing and folding letters, for which I have a *caveat* in your office. In the mailing of letters I have provided means for post-marking of letters, newspapers, and the like, and for the cancellation of the postage stamps thereon at one and the same blow or operation of the instrument or machine by which the post-mark is had or made upon the letter, envelope, or wrapper, or package, in a plain and intelligible manner, and thereby always retaining the same, while the postage stamp or stamps are more effectually and permanently cancelled, so as to prevent frauds upon the revenue derived from the sale and use of such stamps. The said device is arranged upon the type cylinder contained in first paper filed in my said caveat, between the way-bill form of type, and it gives the impression in ink upon the letter, envelope, or packet by means of the revolving cylinder, and at the same time and operation it also gives a heavy impression *in ink* upon the postage stamp; when or where used upon the said letter or envelope, and the postage stamp becomes thoroughly impregnated with ink by the means herein provided, and therefore it cannot be cleansed by chemical washing, or by other means, so as to allow of the same being used a second

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time, and thus frauds are prevented. If there should be no stamp used for payment of postage on letters, packets, etc., this device would do no sort of harm to the letter, envelope, etc., for it would only post-mark the same with the name of the town and date, such as month, day of the month, and year, and upon one side thereof at same time give a heavy impression in ink, which would appear was only intended for cancellation of the postage stamp as aforesaid stated. This

3388 would make a plain and more intelligible *post-mark* than by the old method now in use, while it would at same time, blow, and operation of the instrument cancel in ink the *postage* stamp or stamps when such are used, as aforesaid, in a most thorough, perfect, and permanent manner, so that the same could not be cleansed for the purpose of being used a second time. This part of my invention I construct of the ordinary form of type now used in the post office for the *post-marking* of letters with the name of the town, month,

3389 day of the month, and the year, etc., and I combine therewith, in some good, practical, and suitable manner, a device which I denominate a *postage* stamp cancelling type, to be used in or with any kind of ink suitable for that purpose, and by such combined instruments one device is formed, which will give the name of post office, month, day of the month, and year, and at same time and blow cancel and thus destroy the postage stamps, thereby greatly economizing in the time now required in the making up of the mail, in fact, saving one-half of the labor required for post-

3390 marking and for cancelling of postage stamps, when it is desirable to give the impression of name of the town and date upon the envelope, letter, or packet, in order to preserve the same for any purpose of proofs or other thing. I now think that the best way to make this part of my invention is to use a cross-bar or cross-piece upon the periphery of the cylinder, set forth in other papers in my caveat, and fasten, in some suitable manner, the post-marking stamp upon

3391 one end thereof and the postage cancelling type or

device upon the other end of said bar or cross-piece, which would of course give *dating* stamp at *one* end and *cancelling* stamp at *the other* end thereof. This bar, thus constructed, with said type arranged thereon, as aforesaid, is securely fastened to the periphery of said cylinder in some suitable manner. The cancelling type or stamp may be made of iron, steel, wood, rubber, cork, or of any other suitable material, and the same may be combined with said cross-bar by the drilling

3392 of a suitable hole therein or by a tube to receive the same, and said tube being suitably fastened to said cross-bar, or the same may be fastened directly *upon* and *to* the said cross-bar at any required distance from said dating part or dating type. A screw may pass through said cross-bar into the material used for the cancelling type, and thus hold it firmly thereto, or a suitable tube may first be fastened to said cross-bar and then the cancelling material or part used for the cancelling type may be inserted therein and thereon,

3393 and thereby held until worn out by use, when the same may be replaced. Rubber or cork, I think, will make *the best* and most suitable cancelling type or device, while soft wood, used endwise, will make a most excellent cancelling type. If it should be found impracticable to use the said cylinder and other parts of said machine, as contemplated in the caveat papers now on file, then the said cross-piece or bar may be removed from the said type cylinder by means of loosening the screws by which it is fastened thereto,

3394 and a suitable handle affixed thereto in place of such cylinder, and the same then used as a hand stamping device for post-marking and cancelling postage stamps. The said cross-bar may be removed from said cylinder in order to re-set the type for the date to be given, or for the purpose of removing and replacing the said cancelling type or stamps, and then the same may be replaced upon said cylinder as aforesaid. By means of this device I get a good and more perfect impression upon the letter, envelope, or packet, of the name

3395 of the town, day of the month, month, etc., and at

the same time and operation cancel the postage stamp or stamps *in ink* in a most complete, thorough, and perfect manner. When *cork* is used it contains a greater quantity of the ink used, and being somewhat elastic, and somewhat rough upon the face containing the ink, it will, to a considerable extent, break the enamelled surface of the postage stamp, formed as such by means of the indelible ink used in the manufacture of such stamp so as to form a hard surface, in order  
 3296 that the stamp might not become defaced by transportation to places of sale, while on sale, or while being carried in a person's pocket ready for use; and having broken somewhat such surface of such postage stamp by the blow of the cork upon the same, the ink impregnates in a most thorough manner the whole postage stamp, and of course it cannot be removed without destroying the printed surface of such postage stamp and so defacing it that such efforts at re-use of it would be at once detected. Soft wood used endwise  
 3397 will have nearly the same effect, so, therefore, some soft and porous material will be the most suitable to use in the construction of said cancelling type or device used for the cancellation of all postage stamps.

The cam-frame which draws the letters under said type cylinder for post-marking of letters, packets, etc., and for the cancellation of postage stamps thereon, will give the blow against the said post-marking and postage cancelling device, which is done at one operation and at the same time, and when thrown out of  
 3398 gear, then the way-bill printing part may be worked, and thus print the way-bills as I have described in former papers on file in my said caveat. I would prefer the use of an indelible ink with my said device or instrument or machine, if the same could be had by all the postmasters who use the said machine, etc. This part of said machine may easily and readily be converted into a *hand* stamp when and where no other part of said machine would be used save and except the post-marking containing the name of the town when used, the  
 3399 month, and day of the month, and year, etc., and the

postage stamp cancellor or cancelling device attached to and combined with the said cross-bar or cross-piece substantially as aforesaid, with a suitable handle at the centre of said cross bar or piece, or at some suitable place between the two stamping devices aforesaid, which handle is used for the giving of the blow or impression of the two devices attached to said cross-bar as aforesaid, and of course it would then be a simple device of post-marking stamp, of cross-bar, 3400 and cork, rubber, or wood (or other suitable material), and postage stamp cancelling device combined thus into one instrument, and operated by the handle with one blow, and to be used in or with any kind of ink desired. One blow of the instrument in the hand of the operator will do the printing of the name of the town, of the month, of the day of the month upon the letter or envelope, and the cancellation of the postage stamp in a most complete and effectual manner, substantially as aforesaid, thereby saving great labor 3401 and the re-handling over of the letters in order to post-mark them, and afterwards to cancel the postage stamps when it is desired to have an intelligible post-mark preserved on the letter or envelope and to have the postage stamp permanently cancelled, so as to prevent frauds by the re-use of the same, as is often now the case. This instrument will therefore prevent such frauds, and very much simplify and economize in the time for the making up of the mails for transportation. This will be the effect and result if no other 3402 part of said machine be used save the said parts converted into a simple hand stamp as aforesaid, *to wit*: the post-marking part, the postage stamp cancelling part, all attached to the said cross-bar and combined therewith, as, and in the manner aforesaid.

If the entire machine set forth in all the *caveat* papers be used, there will be great saving of labor and time in mailing of letters and a large quantity of papers, twine, and sealing-wax, etc., by the use set forth in all the papers of this caveat. There would be 3403 also great labor saved as aforesaid by the use of such



hand stamp combined as aforesaid. I am having a full-size machine made according to my caveat papers, which when done I shall apply for a patent, or at least, as soon thereafter as I may be able to get the Post Office Department to consider and adopt, for use in the various post offices, my said improvements, or some parts thereof, preferring to submit the same to the judgment of that department before applying for my patent upon the invention herein contained. I desire  
 3404 you to file this with my other papers in my said caveat. I intend to renew my *caveat*, if such be at all necessary, in order to protect my rights while engaged in efforts with the Post Office Department for the general use of my invention, and especially that part which relates to the hand stamp form of post-marking and postage stamp cancelling combined with and upon a cross bar or piece containing a suitable handle substantially as aforesaid, so as to give both impressions at one blow and operation of the instrument, as aforesaid, thereby saving great  
 3405 labor and preventing frauds, etc.

MARCUS P. NORTON.

TINMOUTH, VT., Aug. 7, 1854.

Ex'd — E. E. MC. C.  
 F. F.

[ENDORSED.]

Complainant's Exhibit — M. D. Leggett, *Fraud*  
 No. 3. August 31, 1878, I. B., Ex'r.  
 3406

### "EXHIBIT B."

This paper marked "Exhibit B," after due notice to M. P. Norton, and trial had before a commission appointed by the Commissioner of Patents, was by the said commission adjudged to be fraudulent and to have been surreptitiously introduced into the caveat file of M. P. Norton for a machine for mailing and folding  
 3407 letters, filed October 20 and 27, 1853.

In the order of the Commissioner of Patents, dated Sept. 18, 1871, and approved by the Secretary of the Interior, in the case of the trial of M. P. Norton for gross misconduct, see the finding of the commission as to charges 1 and 2.

This paper does not therefore form a valid portion of the above named caveat.

M. D. LEGGETT,  
*Commissioner of Patents.*

3408

I hereby certify that the foregoing is a true copy of the Complainant's Exhibit, "M. D. Leggett, *Fraud No. 3*," filed with me on the thirty-first day of August, 1878, in the cause of Christopher C. Campbell against Thomas L. James, in the United States Circuit Court for the Southern District of New York.

IRVING BROWNE,  
*Special Examiner.*

3409

**Complainant's Exhibit Sherwood, J. K. L.,**

J. A. S., Ex'r, DECEMBER 17, 1879.

MARCUS P. NORTON TO C. A. SHERWOOD. Dr.

1857.

3410	January	8.	To	3	Hours	Finish	Printing	Press.
		9.	"	2½	"	"	Stamp.	
		12.	"	3	"	"	"	
		13.	"	2	"	"	"	
		15.	"	2	"	"	"	Press.
			"	4	"	"	Window Fasten-	
							ings.	
		16.	"	1	Hour	Finish	Stamp.	
		17.	"	3	Hours	"	"	
		20.	"	8	"	"	"	
3411		21.	"	7½	"	"	"	
		22.	"	8½	"	"	"	
		23.	"	7	"	"	"	

	January	24.	To	7	Hours	Finish	Stamp.
		26.	"	8	"	"	"
		29.	"	8	"	"	"
		30.	"	5½	"	"	"
		31.	"	4	"	"	"
	February	2.	"	7	"	"	"
		5.	"	5	"	"	Drag.
	March	3.	"	1½	"	"	Stamp.
		16.	"	4½	"	"	"
3412		26.	"	1	"	"	"
		27.	"	7	"	"	"
		28.	"	6	"	"	"
		30.	"	5	"	"	"
		31.	"	8	"	"	"
	April	1.	"	5	"	"	"
		3.	"	3	"	"	"
		4.	"	4	"	"	"
	May	3.	"	5	"	"	"
		4.	"	3	"	"	"
3413		5.	"	1	"	"	"
		8.	"	3	"	"	"
		12.	"	3	"	"	"
		13.	"	4	"	"	"
		14.	"	2	"	"	"
	1859.						
	September	19.	To	1	Hour	Finish	Stamp.
		21.	"	4	Hours	"	"
		22.	"	6½	"	"	2 lbs.
					Bronze.		
3414		23.	"	6	Hours	Finish	Stamp.
		24.	"	4	"	"	"
		26.	"	4½	"	"	"
		27.	"	6	"	"	"
		28.	"	4	"	"	"
		29.	"	5½	"	"	½ hour
					forging.		
		30.	"	6½	Hours	"	"
			"		making 2 stamps at \$4.50 apiece.		
	October	12.	"	1½	Hours	Finish	Stamp.
3415		13.	"	2	"	"	1 hour
					forging.		

1860.

3416	November	5.	To	5	Hours Finish Stamp.	
		6.	"	9	"	"
		7.	"	9½	"	"
		8.	"	1	"	"
		9.	"	8	"	"
		10.	"	9	"	"
		12.	"	9	"	"
		13.	"	5	"	"
		14.	"	9	"	"
		15.	"	12	"	"
						3 hours
						forging.

1860.

3417	November	16.	To	9	Hours Finish Stamp, 1½ lbs.	
					Steel.	
		17.	"	5	Hours Finish Stamp.	
		19.	"	9	"	"
		20.	"	9	"	"
		21.	"	9	"	"
		22.	"	9	"	"
		23.	"	9	"	"
		24.	"	2	"	"
		26.	"	8½	"	"
		27.	"	8	"	"
		28.	"	2	"	"
						½ hour
						Forge.
		29.	"	4	Hours	"
December	1.	"	1	"	"	"

3418 1862.

3419	March	5.	To	3	Hours Finish Stamp.	
	August	25.	"	1½	"	"
		26.	"	1½	"	"
		27.	"	2	"	"
		29.	"	1½	"	"
		30.	"	4½	"	"
	September	2.	"	3	"	"
		5.	"	1½	"	"
		6.	"	7½	"	"
		8.	"	10	"	"

		September 9.	To 5	Hours	Finish Stamp.	
3420	10.	"	10 $\frac{1}{2}$	"	"	"
	11.	"	17 $\frac{1}{2}$	"	"	"
	12.	"	18	"	"	"
	13.	"	3	"	"	"
	14.	"	13	"	"	"
	16.	"	19 $\frac{1}{2}$	"	"	"
	17.	"	18	"	"	"
	18.	"	13 $\frac{1}{2}$	"	"	"
	19.	"	17 $\frac{1}{2}$	"	"	"
	20.	"	4	"	"	"
3421	24.	"	6	"	"	"
	27.	"	$\frac{1}{2}$	"	"	"
	October 10.	To 5 $\frac{1}{2}$	Hours	Finish Stamp,	1 hour	
				Forge.		
	11.	"	15	Hours	Finish Stamp.	
	12.	"	8	"	"	"
	16.	"	6	"	"	"
	17.	"	4	"	"	"
	18.	"	11 $\frac{1}{2}$	"	"	"
	20.	"	2	"	"	"
3422	23.	"	11 $\frac{1}{2}$	"	"	"
	25.	"	8	"	"	"
	27.	"	11	"	"	"
	28.	"	3	"	"	"
	29.	"	1	"	"	"
						1 hour
				Forging.		
	November 4.	"	7	Hours	"	"
	5.	"	3	"	"	"
	6.	"	4	"	"	"
3423	7.	"	9 $\frac{1}{2}$	"	"	"
						1 $\frac{1}{2}$ hours
				Forge.		
	8.	"	10 $\frac{1}{2}$	Hours	"	"
	10.	"	17 $\frac{1}{2}$	"	"	"
	11.	"	14 $\frac{1}{2}$	"	"	"
	12.	"	7 $\frac{1}{2}$	"	"	"
	14.	"	21 $\frac{1}{2}$	"	"	"
	19.	"	4	"	"	"
	20.	"	5	"	"	"
3423						4 hours
				Forge.		

3424	November	21.	To 9	Hours	Finish Stamp.	
		22.	" 9	" "	" "	
		25.	" 6	" "	" "	1 hour
				Forge.		
		26.	" 6	Hours	" "	
		29.	" 14 $\frac{1}{2}$	" "	" "	
	December	1.	" 7	" "	" "	
		2.	" 7 $\frac{1}{2}$	" "	" "	
		3.	" 9	" "	" "	
		4.	" 10	" "	" "	
		5.	" 10	" "	" "	
		6.	" 9	" "	" "	
		8.	" 9	" "	" "	
		9.	" 5	" "	" "	
		10.	" 17 $\frac{1}{2}$	" "	" "	
		20.	" 5 $\frac{1}{2}$	" "	" "	
		23.	" 5	" "	" "	
		24.	" 8 $\frac{1}{2}$	" "	" "	
		26.	" 8 $\frac{1}{2}$	" "	" "	
3425	1863.					
	January	2.	To 1	Hour	Finish Stamp.	
		9.	" 4	" "	" "	
		15.	" 1	" "	" "	
		16.	" 5 $\frac{1}{2}$	" "	" "	
	February	3.	" 4	" "	" "	
		4.	" 5	" "	" "	
	1864.					
3426	January	7.	To 7	Hours	Finish Stamp.	
		22.	" 4	" "	" "	
		25.	" 5	" "	" "	
	February	9.	" 1	" "	" "	
		10.	" 10	" "	" "	
		19.	" 3	" "	" "	
		29.	" 12	" "	" "	
	March	1.	" 8	" "	" "	
		30.	" 3	" "	" "	
	April	11.	" 10	" "	" "	
3427		13.	" 4	" "	" "	

	<b>April</b>	<b>14.</b>	<b>To 13</b>	<b>Hours</b>	<b>Finish</b>	<b>Stamp.</b>
		15.	" 14	"	"	"
		16.	" 10	"	"	"
		18.	" 12	"	"	"
		20.	" 4	"	"	"
		22.	" 5	"	"	"
		23.	" 7	"	"	"
	<b>November</b>	<b>11.</b>	<b>" 8</b>	<b>"</b>	<b>"</b>	<b>"</b>
	<b>December</b>	<b>1.</b>	<b>" 1<math>\frac{1}{2}</math></b>	<b>"</b>	<b>"</b>	<b>"</b>
<b>3428</b>		5.	" 7	"	"	"
		6.	" 8	"	"	"
		7.	" 8	"	"	"
		12.	" 5	"	"	"
		13.	" 8 $\frac{1}{2}$	"	"	"
		14.	" 8	"	"	"
		15.	" 9	"	"	"
		16.	" 2	"	"	"
		17.	" 5	"	"	"
		19.	" 7	"	"	"
<b>3429</b>		20.	" 7	"	"	"
		21.	" 5	"	"	"
		22.	" 9	"	"	"
		23.	" 9	"	"	"
		24.	" 9	"	"	"
		26.	" 9	"	"	"
		27.	" 10	"	"	"

1865.

**January 11. To 5 Hours Repairing Stamp.**  
**3430**

3431

**Complainant's Exhibit T. J. W. Robertson No. 1,**

*Also, Complainant's Exhibit, T. J. W. Robertson's patent, September 22, 1857, numbered 18,249, and the certificate of extension hereto annexed, dated September 22, 1871,*

8482

J. A. S., Ex'r.

**DEPARTMENT OF THE INTERIOR,—UNITED STATES PATENT OFFICE.**

*To all persons to whom these presents shall come, Greeting:*

This is to certify that the annexed is a true copy from the records of this office, of the letters-patent and certificate of extension granted T. J. W. Robertson, September 22, 1857, No. 18,249, for hand-stamp.

8488

**In testimony whereof**, I, W. H. Doolittle, Acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this tenth day of January, in the year of our Lord one thousand eight hundred and eighty, and of the independence of the United States the one hundred and fourth.

[SEAL]

W. H. DOOLITTLE,  
*Acting Commissioner.*

8484

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**UNITED STATES OF AMERICA.**

*To all to whom these letters-patent shall come:*

**Whereas**, T. J. W. Robertson of New York, N.Y., has alleged that he has invented a new and useful hand-stamp, which he states has not been known or used before his application; has made oath that he is a  
8485 citizen of the United States; that he does verily be-



lieve that he is the original and first inventor or discoverer of the said hand-stamp, and that the same hath not, to the best of his knowledge and belief, been previously known or used ; has paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents signifying a desire of obtaining an exclusive property in the said hand-stamp, and praying that a patent may be granted for that purpose : —

3436 These are, therefore, to grant, according to law, to the said T. J. W. Robertson, his heirs, administrators, or assigns, for the term of fourteen years from the twenty-second day of September, one thousand eight hundred and fifty-seven, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said hand-stamp, a description whereof is given in the words of the said Robertson in the schedule hereunto annexed, and is made part of these presents.

3437

**In testimony whereof,** I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand, at the city of Washington, this twenty-second day of September, in the year of our Lord one thousand eight hundred and fifty-seven, and of the independence of the United States of America the eighty-second.

3438

JACOB THOMPSON,  
*Secretary of the Interior.*

Countersigned, and sealed with the }  
seal of the Patent Office. }

J. HOLT,  
*Commissioner of Patents.*

3439

THE SCHEDULE REFERRED TO IN THESE  
LETTERS-PATENT, AND MAKING PART  
OF THE SAME.

*To all whom it may concern :*

Be it known that I, T. J. W. Robertson, of the city, county, and State of New York, have invented a new and useful improvement in hand-stamps: and I do  
3440 hereby declare that the following is a full, clear, and exact description of the same; reference being had to the accompanying drawings, making a part of this specification, in which

Fig. 1 is a side sectional elevation of my improvement.

Fig. 2 is a central sectional elevation of the same.

Fig. 3 is a plan view of the bottom of the stamp.

Similar letters of reference indicate corresponding parts in the several figures.

3441 This invention consists in the construction of hand-stamps in the manner herein described and represented.

*A* is the handle, to the bottom of which is attached a metallic forked shank *B*. To the bottom of this shank is attached a metallic ring *C*, said ring being secured to the shank by means of screw-bolts (*a*). The lower part of the shank is also notched, as shown at (*b, b*), in order to receive the ring *C*, and form a front bearing for it. Various other methods may be adopted at the pleasure of the maker, for attaching the  
3442 ring *C* to the shank *B*.

When the stamp is intended for a letter-stamp, the name of the post-office may be engraved upon the face of the ring *C*, as shown in Fig. 3.

*D* is a shaft which passes horizontally through the shank *B*. Upon this shaft are placed three type-wheels (*c, d, e*), which revolve independent of each other on the shaft *D*. The faces of these type-wheels may be provided respectively with the names of the months of the year, and also the ten numerals.

3443 The shaft *D* is arranged at such a distance from the face of the ring *C* that the type-wheels (*c, d, e*)

may be turned so that the types upon said wheels will come in line or form a horizontal plane with the types on the ring *C*; and thus, when the face of the stamp is inked over by any suitable inking device, and the stamp duly pressed upon a letter or other suitable substance, an impression will be left thereupon of the types contained on the ring *C*, and also of those types of the type-wheels (*c, d, e*) that are in line with the  
 3444 types of the ring *C*.

It will be seen that only one line of types upon the type-wheels can simultaneously come into a horizontal plane with the types on the ring *C*, the remaining types being distributed around the peripheries of the type-wheels (*c, d, e*) so that they cannot touch the paper on which the impression is to be made.

*E* is a lock-pin which passes horizontally through the shank *B*, and also through the type-wheels (*c, d, e*). The object of this pin *E* is to lock the type-wheels,  
 3445 so that when any one line of types has been turned and brought into a horizontal plane with the types upon the ring *C*, the said line of types will be held fast and prevented from getting out of place.

By removing the bolt *E*, the combination of letters on the type-wheels (*c, d, e*) may be changed at pleasure.

*F* is a space-wheel or washer upon the shaft *D*. It is there placed for the purpose of having a greater distance between the type-wheels.

3446 The stamp here shown has the face of its ring *C* made in circular form. But it is obvious that the shape of the ring may be changed to suit the pleasure of the purchaser, without changing the general construction of the stamp. The type-wheels and ring may also be engraved with any suitable letters or figures.

This device is particularly useful for stamping letters, tickets, &c., where the words or number has to be constantly changed.

3447 The common stamps are provided with movable or separate types, secured by means of a screw. These types are liable to be lost or misplaced. But in my

improvement the types are always at hand ready for use.

Instead of the bolt *E* for locking the type-wheels, a small spring may be used, one end being attached to the shank *B*, and the other end pressing into the interstices between the lines of type upon the type-wheels. The red portion in Fig. 2 shows a method of  
 3448 applying such spring. Various other modes of locking the type-wheels can be adopted without substantially changing the construction of the article.

I do not claim broadly the employment of revolving type-wheels for making impressions, for I am aware that such wheels have long been known and used. They are seen, for example, in nearly all book-paging machines.

But, to the best of my knowledge and belief, no hand-stamp like mine has ever been known or used.  
 3449 Therefore,

Having thus described my invention, what I claim as new, and desire to secure by letters-patent, is, —

The construction of hand-stamps in the manner herein described and represented.

T. J. W. ROBERTSON,  
 July 9, 1857.

Witnesses :

A. E. BEACH,  
 W. TUSCH.

3450 Examined C. F., L. M.

#### CERTIFICATE OF EXTENSION.

**Whereas**, upon the petition of T. J. W. Robertson of Washington, D.C., for the extension of the patent granted to him September 22, 1857, for "hand-stamp," the undersigned, in accordance with this Act of Congress, approved the eighth day of July, 1870, entitled  
 3451 "An Act to revise, consolidate, and amend the statutes relating to patents and copyrights," did, on this twenty-second day of September, 1871, decide that said patent ought to be extended : —

Now, therefore, I, Mortimer D. Leggett, Commissioner of Patents, by virtue of the power vested in me by said Act of Congress, do renew and extend the said patent, and certify that the same is hereby extended for the term of seven years from and after the expiration of the first term; viz., from the twenty-second  
 3452 day of September, 1871, which certificate being duly entered of record in the Patent Office, the said patent has now the same effect in law as though the same had been originally granted for the term of twenty-one years. And it is hereby ordered that this certificate of extension be entered on a certified copy of said patent.

In testimony whereof, I have caused the seal of the Patent Office to be hereunto affixed  
 3453 [L. s.] this twenty-second day of September, 1871, and of the independence of the United States the ninety-sixth.

M. D. LEGGETT,  
 Commissioner.

**Complainant's Exhibit T. J. W. Robertson No. 2,**

3454 *Also Complainant's Exhibit, Norton's opposition to the extension of the letters-patent last above mentioned by date and number,*

J. A. S., Ex'r.

**DEPARTMENT OF THE INTERIOR,—UNITED STATES PATENT OFFICE.**

*To all persons to whom these presents shall come, Greeting:*

3455 This is to certify that the annexed is a true copy from the files of this office of the notice and reasons of Marcus P. Norton opposing the extension of the letters-patent granted T. J. W. Robertson, September 22, 1857, No. 18,249, for improvement in hand-stamp.

**3456**

*Acting Commissioner.*

*United States Patent Office, } ss.  
District of Columbia.*

3457

To T. J. W. ROBERTSON,  
Applicant for extension and renewal of above-  
named letters-patent.

3458 To HON. M. D. LEGGETT,  
*Commissioner of Patents.*

8459 will take due notice.

MARCUS P. NOBTON of Troy, N.Y.  
WASHINGTON, D.C.,  
August 15, 1871.

United States Patent Office, }  
 District of Columbia. }

In the matter of the application of *T. J. W. Robertson*, formerly of the city, county, and State of New  
 3460 York, for an extension and renewal of *letters-patent*  
 for improvements in type-wheel dating "hand-stamp,"  
 numbered 18,249, and dated the twenty-second day of  
 September, 1857, with a title of "*hand-stamp*."

*To the Honorable Commissioner of Patents.*

SIR, — Your petitioner, *Marcus P. Norton*, of the  
 city of Troy, county of Rensselaer and State of New  
 York, wishes to oppose, and he does hereby ask per-  
 3461 mission, under the law, of your honor, to grant him the  
 opportunity to contest and oppose the application above  
 referred to, and which was filed in the United States  
 Patent Office on or about the twenty-fourth day of  
 June, 1871. My reasons for contesting and opposing  
 the above-named application for an extension of the  
 aforesaid named *letters-patent*, are mainly and substan-  
 tially as follows: *to wit*, —

*First*, The said applicant, *T. J. W. Robertson* was not  
 and is not the original and first inventor of the inven-  
 3462 tion and improvements described and set forth in the  
 drawings, specifications, and claim in the said *letters-*  
*patent*, dated the twenty-second day of September,  
 1857, and numbered 18,249, and claimed by him there-  
 in and thereby, or of any material and substantial part  
 thereof; the same and each and every part of the said  
 invention and improvements having been made and  
 invented by *Marcus P. Norton* of the city of Troy,  
 county of Rensselaer, and State of New York, in the  
 manner and at the time substantially as herein de-  
 3463 scribed and set forth. The said *Marcus P. Norton*  
 being *in fact* and *in law* the original and first inventor  
 of the said invention and improvements, and of each  
 and every part thereof.

*Second*, If the said *letters-patent* granted to said *Rob-*  
*ertson* on the twenty-second day of September, 1867,  
 and numbered 18,249, with the title of a new and use-

ful "*hand-stamp*," were good, sufficient, and valid in the law, it would appear in *proof*, and at the hearing of the aforesaid named application for such extension of  
 3464 said *letters-patent*, that the said *T. J. W. Robertson* did not and has not at any time subsequently to the granting of said *letters-patent* to him as aforesaid, used due diligence in introducing his said alleged invention and improvements into general and public use.

*Third*, The *pretended* statement and account filed by the said applicant does not present a true and correct statement of his receipts and expenditures on account of said *letters-patent*, he having, on or about the  
 3465 day 1861, sold to "*Peter Low*," then of said city of Troy, the entire *letters-patent* and improvements therein contained for the sum of \$5,000 ("*five thousand dollars*") for the balance of the term of said patent then unexpired, which was between ten and eleven years of the fourteen years for which said *letters-patent* were originally granted, as will fully and at large appear by reference to the record of deed of assignment by said applicant to said *Peter Low*, dated on or about the seventeenth day of April, 1861, and recorded in the  
 3466 United States Patent Office on the nineteenth day of April, 1861, in Liber E 6, p. 346, of the "Book of Transfers of Patent," when it will appear that the said applicant acknowledged *the sale of*, and *the receipt* for the sum of "*five thousand dollars*," the said *letters-patent* and improvements therein contained.

*Fourth*, The aforesaid named and described *letters-patent*, for *legal reasons*, as well as of fact, are not valid, but, on the contrary, the same are *invalid*, and could not be enforced in law or in equity. The said *Robertson* and the several assignees, who, by means of deeds of  
 3467 assignments made and executed by said *Robertson* and his said assignee *Peter Low*, have never, by suit at law or in equity, undertaken at any time during the term for which said patent was granted, to maintain or establish the validity of the same, although *he* and *they* had sufficient knowledge and information that the said invention and improvements were being extensively manufactured, sold, and used in all parts of the United



States of America since the summer and fall of the year 1862 down to the present time, including the large  
 8468 number set forth in the second papers filed in said application for said extension by said *Robertson*, and each and every of which were made and sold without any right or license under said *letters-patent* from said *applicant*, or from any assignee of his of the said patent; but the same were made and sold without the fear or favor of the said *letters-patent*, or of said applicant, or of any assignee of his, and without any license of or from him or them, and for the period or term of eight years last past, and during which time neither the said  
 8469 applicants or any assignee of his have ever dared or ventured to enforce by suit or otherwise the said letters-patent, and to prevent and to account for damages or profits made or gained by reason of such manufacture, sales, or use, in total disregard of the said letters-patent now sought to be extended and renewed by him, the said T. J. W. Robertson.

*Fifth*, The public, having from the beginning denied the validity of the aforesaid letters-patent by the open and notorious manufacture, sale, and use of the said  
 • 8470 invention and improvement in all parts of the country from that time during each and every year, and thus challenged the said *Robertson* and his said several assignees to contest the validity of said patent, and he and they having neglected and refused so to do, have thereby fully conceded and admitted the invalidity of said patent; and for this reason it would be improper and unlawful to extend or renew said patent.

And your petitioner and remonstrant, upon his solemn oath, declares and claims that he is the original  
 8471 and first inventor of the said invention, and of each and every improvement mentioned or set forth in the said letters-patent as early, at least, as the year 1852, when your petitioner caused a full working model to be made containing the said invention, and each and every improvement mentioned, contained, or set forth in the said letters-patent now sought to be extended and renewed for a term of seven years. That the said model was made for your petitioner by *George Richard-*

son of the town of Poultney, in the State of Vermont,  
 3472 where your petitioner was at the time at school in the  
 "Troy Conference Academy." The said Richardson is  
 now dead. The said model was a full and perfect ma-  
 chine, and operated successfully in giving the month  
 and the day of the month at the same time and opera-  
 tion of giving the name of the town or post-office upon  
 a letter or envelope. Your petitioner being then at  
 school, and engaged in further experimenting upon  
 other parts and improvements connected with said  
 machine, and wanting in means whereby to hasten the  
 3473 completion of the same, did not then apply for a patent  
 from the United States, but continued on with such  
 other and different improvements until, in the summer  
 of the year 1855, when, on or about the twenty-first  
 day of June of that year, your petitioner, in order to  
 secure and protect his right to said invention, executed  
 and filed in the United States Patent Office a *caveat*,  
 which, among other things and improvements therein,  
 contained the said invention and each and every im-  
 provement set forth or mentioned in said *letters-patent*,  
 3474 now asked to be extended.

And your petitioner further states upon his solemn  
 oath, that, in the winters of the years 1855 and 1856,  
 he caused to be constructed for himself a full-size work-  
 ing model containing the said invention and improve-  
 ment set forth in applicant's said patent, and of each  
 and every part of the same, which said model also con-  
 tains other improvements made by your petitioner, and  
 it is now upon file in the United States Patent Office  
 in "*case A*" and "*case B*" of your petitioner's applica-  
 3475 tion for letters-patent, to which your petitioner hereby  
 refers. And your petitioner has ever and always  
 claimed to be the original and first inventor of the said  
 invention and improvements, and of each and every  
 part thereof described, set forth, and claimed by said  
 applicant in his said letters-patent, as early, at least, as  
 the year A.D. 1852; and during the same year, to wit,  
 1852, went to the city of Washington, D.C., and to the  
 Post Office Department, to induce the government of  
 the United States to use his said invention for giving

3476 the post-mark and the month and day of the month upon letters, &c.; and your petitioner did not receive much encouragement from that department for the adoption and use of said invention, but was advised that he, your petitioner, did have in his said machine certain improvements that might be adopted and used by the government; and thereupon and thereafter, in the years 1853 and 1854, your petitioner filed a *caveat* upon such improvements, which, at a subsequent time, went into use, and are now in general use, by the Post  
 3477 Office Department and your petitioner, containing other improvements upon the type-wheel machine, until the year 1855, when he filed a "*caveat*," dated June 21, 1855.

MARCUS P. NORTON.

*City and county of Washington, } ss.  
 District of Columbia.*

Marcus P. Norton, the above-named petitioner, being by me duly sworn, doth depose and say that the foregoing paper signed by him, with each and every state-  
 3478 ment therein contained, is true of his own knowledge.

MARCUS P. NORTON.

Subscribed and sworn before me this sixteenth day of August, 1871,

T. C. CONNOLLY, J. P.

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**Complainant's Exhibit T. J. W. Robertson No. 3,**

3479

*Also Complainant's Exhibit, re-issue of the Robertson patent of September 22, 1857,*

J. A. S., EX'R.

DEPARTMENT OF THE INTERIOR,—UNITED STATES PATENT OFFICE.

*To all persons to whom these presents shall come, Greeting:*

This is to certify that the annexed is a true copy,  
 3480 from the records of this office, of the re-issue letters-

patent granted Thomas J. W. Robertson, December 12, 1871, No. 4,675, for improvement in hand-stamps.

3481 **In testimony whereof**, I, W. H. Doolittle, Acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this seventh day of January, in the year of our Lord one thousand eight hundred and eighty, and of the independence of the United States the one hundred and fourth.

W. H. DOOLITTLE,  
*Acting Commissioner.*

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**Re-issue No. 4,675.**

**THE UNITED STATES OF AMERICA.**

3482 *To all to whom these presents shall come :*

**Whereas**, Thomas J. W. Robertson of Washington, D.C., has presented to the Commissioner of Patents a petition praying for the re-issue of letters-patent for an alleged new and useful improvement in hand-stamps (for which letters-patent were issued to him, dated September 22, 1857, and extended seven years from September 22, 1871, which letters having been surrendered, the same have been cancelled, and new letters ordered to issue to him on an amended specification), a description of which invention is contained in the specification, of which a copy is hereunto annexed and made a part hereof, and has complied with the various requirements of law in such cases made and provided, and whereas, upon due examination made, the said claimant is adjudged to be justly entitled to a patent under the law, —

3483 **Now**, therefore, these letters-patent are to grant unto the said Thomas J. W. Robertson, his heirs or assigns, for the term of twenty-one years from the twenty-second day of September, one thousand eight hundred and

3484 fifty-seven, the exclusive right to make, use, and vend

the said invention throughout the United States and the territories thereof.

**In testimony whereof,** I have hereunto set my hand and caused the seal of the Patent Office to be affixed at the city of Washington, this twelfth day of December, in the year of our Lord one thousand eight hundred and seventy-one, and of the independence of the United States of America the ninety-sixth.

3485

[SEAL]  
Countersigned,  
M. D. LEGGETT,  
*Commissioner of Patents.*

B. R. COWAN,  
*Acting Secretary of the Interior.*

3486

4,675.

# UNITED STATES PATENT OFFICE.

THOMAS J. W. ROBERTSON of Washington, D.C.—  
*Improvement in hand-stamps.*

[Specification forming part of letters-patent No. 18,249, dated September 22, 1857; extended seven years; re-issue No. 4,675, dated December 12, 1871]

3487 *To all whom it may concern:*

Be it known that I, Thomas J. W. Robertson of Washington, in the county of Washington and District of Columbia, have invented certain improvements in hand-stamps; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which

3488 Fig. 1 is a side sectional elevation of my improvement. Fig. 2 is a central sectional elevation of the same. Fig. 3 is a plan view of the bottom of the stamp.

Similar letters of reference indicate corresponding parts in the several figures.

My invention relates to the construction of stamps for producing an impression such as a post-mark or other analogous device, a part of which requires to be frequently changed, such as the date, and part requires to remain the same, as the name of the post-office. In  
 3489 order to give such stamps any considerable utility, the impression must be readily made, and that part of the type which requires frequent change must be always on hand. This result I secure by combining in a hand-stamp fixed type for producing that part of the inscription designed to be always the same, and a series of combined changeable types bearing the necessary characters to allow of any desired change, which shall be connected with and form part of the stamp. These types are connected and arranged to revolve in sub-  
 3490 stantially the same manner as the combined types used in book-paging machines, but differing therefrom in having an arrangement by which the desired inscription may be printed repeatedly without changing at each impression. Prior to my invention dating-stamps were made with loose types, book-paging machines were used with combined types in the form of wheels and chains, and machines for printing tickets, &c., had type-wheels combined with permanent inscription-forms; but these last machines were so made as to pro-  
 3491 duce the impression only on the under surface of the materials, and to change the type-wheels at every stroke. So far as I am aware, no dating-stamp was ever made previous to mine with wheel-type or its equivalent, nor a fixed inscription-plate or form combined with such type in such a manner that the latter could be readily turned without changing the relative positions of the said wheels and permanent inscription, and yet be capable of printing simultaneously the combined inscriptions in a small space, as is necessary in  
 3492 cancelling revenue stamps; nor could an impression be readily made by such machines on the upper surface of the paper. My invention, therefore, consists mainly in the construction of a stamp in which combined

changeable dating-types are used in combination with a fixed inscription-form or printing-die, and in so arranging these parts in connection with a stem, or handle, that the dating-types may be easily changed and thoroughly secured, and that the impression may be readily made in a small compass on the upper surface of the material.

*A* is the handle, to the bottom of which is attached a metallic forked shank, *B*. To the bottom of this shank is attached a metallic ring, *C*, said ring being secured to the shank by means of screw-bolts *a*. The lower part of the shank is also notched, as shown at *b*, *b*, in order to receive the ring *C*, and form a front bearing for it. Various other methods may be adopted, at the pleasure of the maker, for attaching the ring *C* to the shank *B*. When the stamp is intended for a letter-stamp, the name of the post-office may be engraved upon the face of the ring *C*, as shown in Fig. 3. *D* is a shaft which passes horizontally through the shank *B*. Upon this shaft are placed three type-wheels, *c*, *d*, *e*, which revolve independent of each other on the shaft *D*. The faces of these type-wheels may be provided respectively with the names of the months, of the year, and also ten numerals. The shaft *D* is arranged at such a distance from the face of the ring *C* that the type-wheels *c*, *d*, *e*, may be turned so that the types upon said wheels will come in line or form a horizontal plane with the types on the ring *C*, and thus, when the face of the stamp is inked over by any suitable inking device, and the stamp duly pressed upon a letter or other suitable substance, an impression will be left thereupon of the types contained on the ring *C*, and also of those types of the type-wheels *c*, *d*, *e*, that are in line with the types on the ring *C*. It will be seen that only one line of types upon the type-wheels can simultaneously come into a horizontal plane with the types on the ring *C*, the remaining types being distributed around the peripheries of the type-wheels *c*, *d*, *e*, so that they cannot touch the paper on which the impression is to be made. *E* is a lock-pin, which passes horizontally through the shank

*B* and also through the type-wheels *c, d, e*. The object of this pin *E* is to lock the type-wheels so that when any one line of types has been turned and brought into a horizontal plane with the types upon the ring *C*, the said line of types will be held fast and prevented  
 3497 from getting out of place. By removing the pin *E* the combination of letters on the type-wheels *c, d, e*, may be changed at pleasure. *F* is a space-wheel or washer upon the shaft *D*; it is there placed for the purpose of having a greater distance between the type-wheels.

The stamp here shown has the face of its ring *C* made in circular form; but it is obvious that the shape of the ring may be changed to suit the pleasure of the purchaser without changing the general construction of the stamp. The type-wheels and ring may also be  
 3498 engraved with any suitable letters or figures.

This device is particularly useful for stamping letters, tickets, &c., where the words or numbers have to be frequently changed.

Instead of the pin *E* for locking the type-wheels, small springs may be used, one end of each being attached to the shank *B*, and the other ends pressing into the interstices between the lines of types upon the type wheels, and are so made as to prevent accidental movement of the wheels in either direction.

3499 I do not limit myself to the precise construction here shown, as it may be changed without essentially varying from my invention.

Although either the pin *E* or springs may be used separately for locking the type-wheels, I should prefer to use them in combination, as the springs may hold the day-wheels in position when the month-wheel is being turned, which the pin *E* will not do; and, when the wheels are properly arranged, the pin may be screwed fast, and the wheels much more securely locked than  
 3500 by the use of springs alone.

Having thus described my invention, what I claim as new, and desire to secure by letters-patent, is, —

1. In combination with a handle and a series of printing-wheels or their equivalents for printing dates, a fixed type-form or printing-die for dating purposes, substantially as described.



2. A hand-stamp having a permanent inscription-form or die provided with an aperture through which the type-wheels work, when so arranged that the said  
 3501 type-wheels may be turned for changing the dates without shifting the fixed form or die, substantially as specified.

3. A hand-stamp having a series of type-wheels provided with holes to receive a locking-pin, *E*, substantially as specified.

T. J. W. ROBERTSON.

Witnesses :

CHAS. A. PETTIT,

THOS. D. D. OURAND.

3502

### **Affidavit of Cyrus A. Sherwood,**

*Prefixed to Complainant's Exhibit Norton's Caveat.*

### **United States Circuit Court.**

3503

SOUTHERN DISTRICT OF NEW YORK.

IN EQUITY.

THOMAS J. W. ROBERTSON

*vs.*

THE SECOMBE MANUFACTURING COMPANY.

3504 *Northern District of New York,* } ss.  
*County of Rensselaer.*

Cyrus A. Sherwood of the city of Troy in said county, being by me duly sworn, doth depose and say, that, on the nineteenth day of March, 1872, he made a deposition before John T. Lamport, a United States Commissioner, in which, among other things, deponent stated that, during the construction of a certain model therein described, he was aided in the construction of

the same by means of certain copies of a caveat then on file in the Patent Office, as deponent was informed  
 3505 by Marcus P. Norton, and believes the same to be true; and for a more full statement of the same, deponent refers to that deposition.

Deponent further says that he has carefully read the certified copy of caveat hereto annexed, and marked "Exhibit B, Norton," and dated "June 21, 1855, for Railroad Ticket Printing-Press," and especially so the additional paper therein contained and dated "Tinnmouth, Vt., August 21, 1855," and signed "Marcus P. Norton;" and deponent believes the same to be a true  
 3506 and faithful copy of the additional description paper from which deponent was aided in the construction of the model mentioned in two former depositions, dated respectively "March 19 and April 5, 1872." The said additional description paper in the certified copy of the caveat hereto annexed contains the same identical invention as is represented by the said model.

Deponent further says that the certified copy of the caveat above referred to was certified by M. D. Leggett, Commissioner of Patents, on the twenty-second  
 3507 day of August, 1871, as will appear by reference to the certificate thereof of said Commissioner of Patents.

CYRUS A. SHERWOOD.

Subscribed and sworn to before me, this fifth day of April, 1872.

A. D. LYON,  
*Notary Public, Troy, N.Y.*

[SEAL]

3508

**Complainant's Exhibit Norton's  
Caveat, Dated June 21, 1855.**

8509

J. A. S., EX'R, JUNE 29, 1878.

THE UNITED STATES PATENT OFFICE.

*To all persons to whom these presents shall come, Greeting :*

This is to certify that the annexed is a true copy from the files of this office of the caveat of M. P. Norton, filed June 21, 1855, for "Railroad Ticket Printing-Press."

3510

**In testimony whereof**, I, M. D. Leggett, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this twenty-second day of August, in the year of our Lord one thousand eight hundred and seventy-one, and of the independence of the United States the ninety-sixth.

M. D. LEGGETT,

*Commissioner.*

3511

*To the Commissioner of Patents :*

The petition of Marcus P. Norton of Tinmouth, in the county of Rutland, and State of Vermont, *respectfully represents*, —

That he has made certain improvements in a machine for the purpose of printing railroad tickets, which is called the "*Railroad Ticket Printing-Press*," and that he now is engaged in making experiments for the purpose of perfecting the same preparatory to his applying for *letters-patent* therefor. He therefore, prays that the subjoined description of his invention may be filed as a *caveat* in the confidential archives of the Patent Office, agreeably to the provisions of the Act of Congress in that case made and provided, he having paid into the Treasury of the United States twenty dollars, and otherwise complied with the requirements of the said Act.

3512

MARCUS P. NORTON.

TINMOUTH, VT., June 4, 1855.

### 3513 SUBJOINED DESCRIPTION OF RAILROAD TICKET PRINTING-PRESS.

My invention consists of a machine for the purpose of printing and cutting railroad tickets, cards, &c. A frame is made of iron, and in shape sufficient to contain the machinery for the above purpose. A semi-cylinder is made stationary at or near the bottom of the frame; on the surface of said cylinder passes the inking-rollers, which are moved over its entire surface  
 3514 by the rotation of a crank hereafter described. A square bar passes up through said cylinder in its highest part. In the upper end of this bar the form of type is made fast by sliding into a dove-tail groove, so as to admit of different forms of type for the purpose of printing tickets or cards for different stations on the line of railway. The form or forms thus secure, is moved up and down by means of a cam revolving in the semi-cylinder, or by a toggle-joint lever working in the aforesaid cylinder. It is moved up for the purpose  
 3515 of giving the impression, and down to ink the type. When the form is brought down by the cam or toggle-joint lever, it is on a line with the surface of the said cylinder; then the inking-rollers pass over it and ink the type; then, by working the machine, it moves up and leaves the desired impression on the under side of the paper, which is under the impression-plate. The cam in the cylinder is made fast to a shaft extending under the said cylinder. At one end the said shaft there is a cog-wheel geared with a cog-wheel on the  
 3516 shaft, which holds the crank moving the inking-rollers. Said cog-wheels are made of a size required, so as to let the ink-rollers pass over the type when the form is at rest, and to let the form move up to give the impression when the inking-rollers are brought to the extreme end of the semi-cylinder by the roller-crank. In the cog-wheel upon the crank-shaft, there are cogs left out, for the purpose of letting the form of type remain at rest, when the inking-rollers pass over to ink the type. At one end of the said roller crank-

3517 shaft, the driving power is applied. Over the semi-cylinder passes a part of the frame, through which passes the type in its upward and downward motions, and into which slides the required form, held fast by means of a dove-tail groove. Said form is made of iron and steel. The upper part is made to conform to or with the impression-plate, thus forming a shear-box for the purpose of cutting the ticket or card the required size. Over this shear-box is an impression-plate with an India-rubber face, made the exact size of the

3518 shear-box below. The said plate is made to rise and fall by means of a crank attached to a shaft below, and connected by crank-rod with said plate. The said plate moves up to let the sheet of paper pass under, which, when done, moves down into the shear-box, cuts the ticket or card, and remains at rest while the impression is given. The paper is fed to the machine in sheets, and is cut into the required size, one at a time, then printed. In the said shear-box there are two springs extending the whole length of the said

3519 box, and on opposite sides; one is placed higher than the other, so as to take off the printed ticket or card as the form of type moves down to receive ink. Said springs give back so as to let the type pass up to give the impression. After the impression is given, the afore-said impression-plate moves back to its place. The said plate remains at rest while the impression is being given, by the omission of cogs in the proper place of the upper cog-wheel to correspond to the omission in the cog-wheel below, governing the form of type. At the ex-

3520 treme line of the semi-cylinder, and upon each side, there is a reservoir for ink, under which are distributing-rollers if required, made to revolve by being attached to some part or parts of the machine. The form of ticket is made like the one hereafter annexed. The name of the road, the name of the town where the ticket was sold, the day of the month and year when sold, and name of town to which it is sold, are stereotype plates made of an exact size to fit each place respectively, and held there by means of dove-

3521 tail grooves. The word "Clarendon," for example, is

drawn out, and "Rutland," of the same size, is inserted. The word "Rutland" at one end of the ticket is drawn out, and "Clarendon," of the same size, is inserted; then you have a ticket from Clarendon to Rutland, the reverse of the present form. Then take out the day of month, and put in the required date; change the month and year in the same manner when required. In the same manner as above described, all the different towns are changed upon the line of the road. For  
 3522 printing coupon tickets, remove the shear-box and impression-plates, and put in the coupon form and impression-plate, which is done by drawing the said form out of the aforesaid dove-tail groove, and sliding the coupon form into the same place. The coupon form is made of any of the other forms, as the case may require, all of which are put in dove-tail grooves in a plate of the required length.

#### THE OBJECT OF THE PRESS.

- 3523 1st, To save the trouble and expense for railroad companies of getting tickets printed at common printing-offices, also to save so many forms as required now.  
 2d, To print the ticket with the day of the month on which it is sold, and for which it is good.  
 3d, To have the ticket-clerk print the ticket or tickets when called for, and distribute them along the line of the road the day previous to the sale, or,  
 4th, To have a press in each ticket-office along the road, and print the ticket or tickets when sold.

3524 MARCUS P. NORTON.

<b>RUTLAND.</b>	<b>Western Vermont Rail Road.</b>	<b>JULY 4, 1855.</b>
	<b>CLARENDON.</b>	
	<b>GEO. R. WEED.</b>	

3525

*Rutland County and State* } ss.  
*of Vermont.*

On this eleventh day of June, 1855, before me, the subscriber, a justice of the peace, personally appeared the within named Marcus P. Norton, and made solemn oath that he verily believes himself to be the original and first inventor of the manner herein described for printing and cutting railroad tickets; and that he does  
 3526 not know or believe the same was ever known or used, and that he is a citizen of the United States.

Dated at Tinmouth, on this eleventh day of June, 1855.

GEORGE CAPRON, JR.,  
*Justice of the Peace.*

Examined M. A. O.

AUGUST 10, 1870.

*Hon. Commissioner of Patents.*

3527 SIR,—Please have made for me certified copy of file wrapper and contents thereof of my *caveat* upon “Railroad Ticket Printing-Press,” filed June 21, 1855.

I want two copies of these papers certified in two separate packets.

MARCUS P. NORTON.

# ADDITIONAL PAPER TO RAILROAD PRINT- ING-PRESS.

3528

TINMOUTH, VT., August 21, 1855.

*Hon. Commissioner of Patents.*

SIR,—I wish to file this paper as an additional *caveat* description to my Railroad Ticket Printing-Press, now on file under date of June 4, 1855, and sworn to the eleventh day of June, 1855.

I propose to make the form of type as I have described in my *caveat*, or make a cylinder of sufficient size to contain upon its surface or periphery the name  
 3529 (in stereotype) of the name of stations on the line of road in order as they are on said road. This I call the

- cylinder of towns to where tickets are sold. This cylinder is placed into the form, and made to revolve at the will of the operator. There is another cylinder of the same form like unto the other, and this is called cylinder from which the tickets were sold. The name of the road, and all other printed matter to be done, may be done by cylinders constructed for that purpose, or stationary type may be used for all excepting for
- 3530 the month, the day of the month and the year, which will be done by cylinders made for that purpose. At one end of each cylinder there is an index for each cylinder, and a pointer connected with the cylinder revolves the same to where it may be desired to use the same, where it is then held by the use of a pin and spring. The operator moves these cylinders to and from whatever name or date he wishes to sell and date tickets for use on the railroad. This press is chiefly designed to be used in the general ticket-office by the
- 3531 general ticket-master or his clerks, or it may be used in any office on the line of the road where printing and dating is desired. The said cylinders, when moved to their respective places, are held fast by a spring connected with the pointer, and governed or regulated by the indexes, as will more fully appear herein. I now set forth a series of revolving type-wheels, or cylinders, for printing certain matters on railroads; but I also intend such wheels to do all kinds of printing required in any office, other than the printing the name of
- 3532 towns on railway line, with the date of the selling of the tickets, all of which is done by means of suitable cylinders for that purpose. I now deemed it best to give a more full description of the dating-wheels, and it is substantially as follows: I make two wheels or more, if necessary, and on the circumference or periphery of which I have the required type arranged so as to print the several months in the year, and on another cylinder or wheel I have arranged the type to print the day of the month. There may also be a type
- 3533 for the years, so that several years may be printed when desired from the type put on a wheel in same manner as for the month and day of the month.



These wheels or cylinders containing such type as may be desired to print from, and put and arranged on a central shaft or other good bracing or turning point, and the printing surface is brought together on a line or in a suitable form, when the month, the day of the month, and the year, with any other matter connected with the same, as printed by a blow of the instrument  
 8534 arranged to give the impression. It may be used as a hand-printing or stamping device for dating any thing desired to have the date printed or formed thereon. This would be very convenient for them ; there would be no type to lose, for all the dates would be on the cylinders, from which the same may easily and readily be set or arranged to print the correct date.

The dating cylinders may be of any size that will answer the purpose required. The day-of-the-month wheel may be made of such size as to require two  
 8535 wheels in order to give the correct dates, and to reduce the size of the wheels, or cylinders. In that case one wheel would have figures 1, 2, 3, on the periphery of the same, while, on the wheel to correspond to the same, there would be on the periphery the figures 1, 2, 3, 4, 5, 6, 7, 8, 9, and a (0) or cipher.

These, when changed, will give any date required. It will now be seen that the correct date is given from and by type-wheels or revolving and changing cylinders or discs.

8536 The letters, or type, may be cast on the periphery of such wheels, or formed in slips, or pieces, and soldered upon the periphery of the wheel desired, or they may be engraved on the same.

Or they may be swedged, formed, or pressed thereon out of the same circumference, or periphery, or they may be so constructed as to be dove-tailed therein. There are various other ways for forming or constructing on such wheels such letters or figures as may be required. The wheels, or cylinders, may be made of  
 8537 malleable cast-iron, or of other cast metal, or made of brass or similar metal. Brass would be the better metal to use when the letters or figures are to be engraved or swedged, or raised or pressed or formed

therein, because it would work more easy, and make better work.

8538 Stereotyped letters and figures can be made, and then soldered on such circumference surface of such wheels. I think the best way will be to dove-tail them in, because, when worn out, a new one can be put in its place; and it would require expensive machinery to cast a press-form, or swedge the letters or figures on said circumference, or periphery, of such type and dating-wheels, or cylinder.

8539 To ink the said wheels, or type cylinders, when arranged for printing and dating, I pass an ordinary ink-roller over the face, or surface, of all the type to be printed from, and then it is returned to its proper place. This roller is passed over a suitable distributing surface, which is for the purpose of getting the ink on the type-wheels more evenly, and thus make a better impression on the paper to be printed and dated.

These wheels are each operated in a suitable form or chase, constructed for that purpose, to set them each in proper condition or order for the date; and, as a matter of convenience, I use pointer, or arm, of any suitable construction, and secure the same to the shaft or the type-wheel, or the wheel itself, and then I have indexes on the frame or on the respective type-wheels, so arranged as to enable the operator to put the right 8540 month, day of the month, or year, &c., into the printing line, or surface, so that the same will print the date required. These indexes will be of any suitable construction, and engraved, stamped, or otherwise put upon the said type-wheel framework, or upon each wheel as may be best, and in such manner that the operator may readily see the same, so as to know how to govern the setting of the wheels in order to print correctly the matter desired.

8541 These wheels, or cylinders, are held in their fixed position by a small pin having a suitable spring attached, which may be in the arm, or pointer, or in the said framework, and extending into the respective wheels having a corresponding hole or opening for the spring to pass into to hold it.

The spring is to hold the pin in its place so that the wheel cannot move when in its fixed position, and in use. By moving any one of the type-wheels, or cylinders, forward to change its use, either to change the month, or the day of the month, or the year, the pin  
 3542 will be forced into a corresponding opening by the spring, and thus held until another change is had, so the operation will continue. Words or figures may be used to index or represent the month, and may be on the side of the wheel, or on the frame holding the type-wheels on their shaft, and will, of course, always be so constructed as to be in sight the most convenient. This will apply to all the wheels, or cylinders, for printing the month, the day of the month or the year; so, too, if any cylinder be used to print any other matter,  
 3543 ter, the same may have an index to correspond to the matter to be printed.

The said dating type-wheels may be in a fixed frame, and the impression taken from the top by any suitable device to give the force, or blow, thereon, and the inking-roller made to pass over the top in any good and convenient way; or the said type dating-wheels and frame, in which the same operate, may be so arranged as to give a striking-like blow by the hand, or put into a frame on a stem and be forced down upon the paper,  
 3544 and then brought back by a spring.

I am having a machine made with these improvements in, and hope to apply for a patent within the *caveat* year; yet there are some other improvements I propose to make in this machine as a whole. The machine may be used for banks, railroad companies, business firms, and in post-offices.

Respectfully,

Your ob't serv't,

MARCUS P. NORTON.

3545 Examined V. E. L.

TINMOUTH, VT., August 21, 1855.

*Com. of Patents.*

Will you please send me the second part of your report of 1854?

Can I make application for a patent (on my caveat)  
for post-office way-bill printing and folding machine?  
The caveat has at two different times expired. I wish  
to make application on the folding part *first*, as the  
3546 whole machine will be subject to *two* patents or appli-  
cations. If I can apply for one at the time, can the  
caveat fee be applied on *that* one application?

Respectfully,

Your ob't serv't,

MARCUS P. NORTON.

AUGUST 5, 1871.

I hereby consent that Mr. Robertson have a duly  
3547 certified copy of my caveat herein named.

MARCUS P. NORTON.

Please furnish a certified copy of the file and con-  
tents of caveat of Marcus P. Norton for Railway  
Ticket Printing-Press, dated June 21, 1855.

T. J. W. ROBERTSON.

File and contents caveat, see Aug. 5.

*Great haste.*

3548 APPLIED MARCH 21, 1857.

CAVEAT.

No.

M. P. NORTON.

Of *Tinmouth,* }  
County of *Rutland,* }  
State of *Vermont.* }

3549 RAILROAD TICKET PRINTING-PRESS.

Rec'd June 21, 1855.

Petition, " "

Affidavit, " "

Specification, June 21, 1855.

Drawing.

Model.  
 Cert. dep.  
 1 Cash \$20, June 21, 1855.  
 3550 Examined.  
       Issue.  
       Patented 185  
 3 Recorded vol. page  
       Examined R. W.

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**Complainant's Exhibits No. 1 to No.  
 17 inclusive,**

3551

J. A. S., Ex'r, FEBRUARY 6, 1880.

*Letters of commendation to GEN. ULYSSES S. GRANT,  
 President-elect of the United States of America,  
 recommending the appointment of the HON. MARCUS  
 P. NORTON to the governorship of the Territory of  
 Wyoming.*

8552

STATE OF NEW YORK — IN ASSEMBLY.  
 ALBANY, Feb. 24, 1869.

HON. REUBEN E. FENTON,  
*Senator of the United States,*  
 Washington, D.C.:

8553 *Dear Sir,* — The Hon. Marcus P. Norton of Troy, N.Y., is, I learn, a candidate before the incoming administration for the position of governor of Wyoming Territory. Mr. Norton bears with him to Washington the cordial recommendation of a long array of eminent citizens, not only of this State, but likewise of Vermont, his native Commonwealth. I commend him to you most sincerely as a citizen of distinguished eminence in both public and private life, and one who will fully and ably vindicate Gen. Grant's confidence in the event of his appointment to the position he asks at the hands of the administration about to assume power.

3554 Mr. Norton is a leading lawyer at the Bar of this State, and is a gentleman enjoying the full confidence of our friends here, having, I am glad to say, been active and outspoken in favor of your elevation to the senatorship of the United States, in place of the present incumbent. I most sincerely hope that you may find it to be entirely compatible with the public interest to cast the weight of your influence with Gen. Grant in relation to this appointment in favor of Mr. Norton.

Respectfully,

T. G. YOUNGLOVE,

3555

*Speaker of the House.*

STATE OF NEW YORK—IN ASSEMBLY.  
ALBANY, Feb. 26, 1869.

To the HON. REUBEN E. FENTON,  
*Senator of the United States,*  
Washington, D.C.:

3556 *Dear Sir,*—I have great pleasure in recommending to you, and in soliciting your earnest and active efforts in favor of, the Hon. Marcus P. Norton of Rensselaer County, State of New York, to be governor of Wyoming Territory.

This gentleman holds a high position at the Bar of the State of New York, and is well known to the Commissioner of Patents of the United States as a practitioner of undoubted merit and ability.

3557 Mr. Norton would hold high the dignity of the position to which he hopes to be elevated; and his many friends in the county and State would feel that the incoming administration had done partial justice to the claims of the great State of New York, in placing one of its favorite sons in a position which he is so well qualified by his intellectual powers to honor.

Whatever favor is done to Mr. Norton will be considered as personal to myself.

Respectfully,

GEO. M. GLEASON,

*Member of Assembly, and Chairman of Committees.*

3558

OFFICE OF "THE TROY WEEKLY PRESS,"  
TROY, N.Y., Feb. 27, 1869.

GEN. U. S. GRANT,

*President-elect of the United States :*

Learning that Marcus P. Norton, Esq., of this city, will apply to you for appointment to the position of governor of the Territory of Wyoming, I beg leave to say that his designation to the place would give me the highest satisfaction, and, I believe, would meet the approbation of this entire community, in which Mr. Norton is well known as a gentleman of the most unsullied character and of first-class executive abilities.

Very respectfully,

A. S. PEASE,

*Editor "Troy Press."*

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TROY, Jan. 25, 1869.

*To the President-elect, GEN. U. S. GRANT :*

3560 Sir, — Marcus P. Norton, Esq., of this city, who has been engaged in the practice of the law for the last fifteen years, intends to apply for an appointment under your administration. Mr. Norton is intelligent, industrious, and persevering, and possesses much more than ordinary executive ability. His friends will be gratified if his application is successful.

C. R. INGALLS,

*Justice Supreme Court State of New York.*

3561

NATIONAL STATE BANK OF TROY,  
TROY, N.Y., Feb. 3, 1869.

GEN. U. S. GRANT,

*President-elect of the United States :*

The undersigned, Officers and Directors of the National State Bank of Troy, N.Y., respectfully recommend the appointment of Hon. Marcus P. Norton of Troy for the position of governor of the new Territory of Wyoming. He is a lawyer of eminent abilities in

3562 the line of his profession, has executive abilities of a first-rate order, and possesses those qualities of character which would fit him to be a popular and creditable executive; and we believe his appointment would prove highly satisfactory to your friends in this State, and reflect credit on your administration; and as such we commend him to you.

Respectfully your obedient servants,

3563

WILLARD GAY, *Cashier*,  
ALFRED B. NASH, *V.-P't*,  
JOHN HITCHINS,  
GEORGE D. WOTKYNs, } *Directors*.

RUTLAND, Jan. 14, 1869.

FRIEND NORTON:

I send you herewith the testimonials bearing upon the subject of your laudable ambition. I am happy to say to you that I can obtain any desired number of  
3564 vouchers for you in this, our native county.

Anticipating your honorable elevation under the sanction of our respected and confided-in President-elect,

I remain, as ever, your friend,

D. E. NICHOLSON.

SCHAGHTICOKE, Feb. 20, 1869.

*To his Excellency* U. S. GRANT,

3565 *President-elect of the United States:*

Having been informed that Hon. Marcus P. Norton of Troy, N.Y., proposes to solicit at your hands the nomination for governor of Wyoming Territory, I take this way of expressing my earnest wish that his application may meet with official approval, and this because of his acknowledged ability as a lawyer; commanding executive talent as a man; generous, cheerful, and agreeable character as a friend; and of tried and undoubted loyalty as a citizen. Combining so  
3566 many excellencies of character, I think that, by and



through his appointment, the Government would receive *honor*, and all his friends the consciousness of not having mistaken their man.

I am, very truly yours,

R. M. HASBROUCK,

*Delegate from the 15th Cong. Dist. to the  
Nat'l Convention at Chicago, in 1868.*

3567                      STATE OF VERMONT — EXECUTIVE CHAMBER,  
RUTLAND, Jan. 14, 1869.

GEN. U. S. GRANT:

*Dear Sir*, — Hon. Marcus P. Norton, now of Troy, N.Y., but formerly of this county, is a gentleman who would honorably fill an important position under the Government, and I commend him to your honorable consideration.

I have the honor to be your obedient servant,

3568    JOHN B. PAGE,  
Governor of Vermont.

TROY, N.Y., Feb. 18, 1869.

*Your Excellency:*

I have the honor to recommend to your favorable consideration Marcus P. Norton of this city, for the position of governor of the Territory of Wyoming.

3569                      Mr. Norton has been and is one of our most influential and active members in the Republican ranks of this county; his appointment would be a great gratification, not only to the leaders, but to the rank and file.

His services to his country, his ability and integrity, assure me that he would do honor to the office and to your selection.

I am, sir, very respectfully,

Your obedient servant,

ED. L. COLE,

*Chairman Rep. Central Com.*

To U. S. GRANT,  
3570                      *President-elect of the United States.*

TROY, N.Y., Jan. 30, 1869.

To GEN. U. S. GRANT,

*President-elect of the United States :*

Sir,—The Hon. Marcus P. Norton is a parishioner of mine, whom I hold in high estimation. If you were to make him governor of Wyoming, I have no doubt he would do credit to himself, and render much and valuable service to his country. For my own sake, I hope you will not give him this appointment, as I can poorly afford to lose him.

T. W. COIT,

*Rector of St. Paul's Church.*

OFFICE OF TROY & BOSTON RAILROAD CO.,  
TROY, N.Y., Feb. 10, 1869.

*To the President-elect :*

I understand the Hon. Marcus P. Norton is about to apply to the Government for an appointment as governor of Wyoming Territory.

I regard Mr. Norton as a gentleman of broad and comprehensive views, and a lawyer of more than ordinary ability, and believe him eminently qualified to administer the office for which he will ask.

Respectfully,

C. W. MOSELEY,

*Supt. T. & B. R. R.*

3573

STATE OF VERMONT,  
RUTLAND, Jan. 1, 1869.

*To the President-elect, U. S. GRANT :*

As a native fellow-townsmen of Hon. Marcus P. Norton of Troy, N.Y., allow me to endorse his application for our nation's great commission to the Executive Department of Wyoming Territory. While I cannot hope to be known beyond the limits of our own little vigorous Vermont, whose liberal and valued honors and services I have shared in town, county, district, and State commissions, I refer with pride and confidence to

the worthy names with which my friend, the applicant, is endorsed to the Executive confidence.

Submissively,

D. E. NICHOLSON,  
*State Senator, Vermont.*

3575

WHIG PRINTING HOUSE,  
TROY, N.Y., Feb. 26, 1869.

To HON. REUBEN E. FENTON:

*Dear Sir,* — Hon. Marcus P. Norton of this city is a candidate for the office of governor of the Territory of Wyoming. He is a man of energy and worth, and of excellent standing in this community. He is a lawyer of distinction, capable of filling such a position with ability and credit. He has always been a Democrat: but, when the first gun was fired upon Sumter, he joined the Union party, and has ever since acted and  
3576 voted with the Republicans. With myself and others in this city he supported you for United States Senator.

Very respectfully,

ALEX. KIRKPATRICK,  
*Editor and Proprietor Troy "Whig."*

RUTLAND, VT., Dec. 30, 1868.

To the *President-elect*, GEN. U. S. GRANT:

3577 Permit me to commend to the President the name of Hon. Marcus P. Norton, now of Troy, N.Y., a native of my county, who has already, from his fitness for public service, acquired a character and standing that entitle him to the appointment to which he aspires.

J. PROUT,  
*Judge of the Supreme Court, State of Vermont.*

I concur in the above.

3578

WM. M. FIELD,  
*Sheriff of Rutland Co., Vt.*

POST-OFFICE, TROY, Feb., 1869.

GEN. U. S. GRANT,

*President-elect of the United States :*

3579 *Dear Sir,*—I take pleasure in commending to your favorable consideration the application of the Hon. Marcus P. Norton for an appointment as governor of Wyoming Territory. Mr. Norton has been long and successfully engaged in the legal profession in connection with the United States Circuit and Supreme Courts, and with the State Courts, and in this, as also in all his social relations, has evinced a degree of discipline in mind and heart that, in my judgment, eminently qualify him for the important responsibility which he desires to assume. Any confidence or trust that may be reposed in him, I believe will be fulfilled with strict fidelity.

Very respectfully,

ALONZO ALDEN,

3580

*Late Col. 169th Regt., N. Y. V., and Brevet Brig.-Gen., and Postmaster at Troy.*

BOARD OF EDUCATION,

TROY, N. Y., Feb. 11, 1869.

GEN. U. S. GRANT,

*President-elect of the United States :*

3581 *Dear Sir,*—Having learned that Marcus P. Norton, Esq., of this city, is an applicant for appointment as governor of the Territory of Wyoming, I take great pleasure in adding my testimony as to his entire fitness and capacity for the position.

His great executive ability, combined with legal talents of the highest order, render him eminently qualified for such a trust, and, without question, would make his administration a successful one.

With great respect I remain very truly yours,

WILLIAM KEMP,

3582

*President Board of Education,*

Troy, N. Y.

RENSSELAER COUNTY, TREASURER'S OFFICE,  
TROY, N.Y., Jan. 25, 1869.

*To the President-elect, GEN. U. S. GRANT :*

Be pleased to allow me to bear testimony, and to offer recommendations to the President of the United States, in the matter of the application of the Hon. Marcus P. Norton of this city, who, with an honorable  
3588 and commendable ambition, desires to be appointed to the high and important office of governor of Wyoming Territory.

I have been well acquainted with Mr. Norton for the past thirteen years. He is a lawyer by profession, of profound learning, and of high standing at the Bar of this county.

I take pleasure in recommending him for the above position.

Your obedient servant,

3584

S. O. GLEASON,  
*Treasurer of Rensselaer Co., N.Y.*

WASHINGTON, Feb. 16, 1869.

*To the President-elect of the United States :*

Mr. Marcus P. Norton informs me of his intention to apply for the governorship of Wyoming Territory. He is a gentleman in every way qualified for the position, a lawyer of education, and has been thoroughly  
585 devoted to the cause of loyalty and his country's interests during the war. He would, I have no doubt, serve with benefit to the country and with credit to himself.

Very truly, etc.,

JOHN A. GRISWOLD,  
*Member of Congress, Troy, N.Y.*

3586

I assent fully to the statement of Hon. John A. Griswold, with reference to the qualifications and deserv-

ings of Mr. Marcus P. Norton, and cheerfully commend his application to the favorable consideration of Gen. Grant, President of the United States.

J. M. FRANCIS,  
*Editor "Troy Daily Times."*

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3587

I cheerfully concur in the foregoing recommendations, having been well acquainted with Mr. Norton many years.

MARTIN I. TOWNSEND.  
TROY, N.Y., March 1, 1869.

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WELLS, VT., 23d Jan., 1869.

3588 TO HIS EXCELLENCY U. S. GRANT,  
*President-elect of the United States :*

From association with those who are personally acquainted with Hon. Marcus P. Norton, from the unanimous expression of his own townsmen of faith and trust in his ability and integrity, and from personal acquaintance under circumstances calculated to exhibit the qualities of head and heart, I gladly bear this testimony to his uniform good character as a man, undoubted loyalty as a citizen, and that he possesses those

3589 qualities which eminently fit him for the performance of any trust which, under the appointment of the government, he may receive.

MARCUS D. GROVER,  
*Member of Vermont Legislature.*

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STATE OF NEW YORK — IN ASSEMBLY.  
ALBANY, February, 1869.

3590 HON. R. E. FENTON,  
*Senator-elect of the United States :*

*Dear Sir,* — Major W. H. Merriam solicits from me a letter endorsing the recommendation of Hon. Marcus

P. Norton for the office of governor of Wyoming Territory. Mr. Norton is in every way qualified to discharge the duties of said office; he is a lawyer of distinction, and a gentleman of high reputation; is a stanch Republican, and was a friend of yours in the senatorial contest.

8591 I join with Major Merriam in cordially asking you to use your influence with the President in securing for him the position he asks.

Very truly,

S. E. MARVIN,

*State Adj't-Gen. on Staff of Gov. Fenton.*

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TROY, N.Y., Feb., 1869.

8592 GEN. U. S. GRANT,

*President-elect of the United States :*

The Hon. Marcus P. Norton, who applies to you for the governorship of Wyoming Territory, has long been familiarly known to me, and I take pleasure in recommending him as every way qualified for the designated office. He was born and educated in Vermont, and at Union College, N.Y.; and the integrity, fidelity, and loyalty of the "Green Mountain" State enter largely into the composition of his nature. He is a lawyer of

8593 experience, and has won eminent distinction in his profession. In administrative ability and in moral character I regard him worthy of your confidence, and equal to any person for the place desired.

Respectfully,

C. F. BURDICK,

*Presiding Elder M. E. Church.*

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8594

RUTLAND, VT., Jan. 12, 1869.

*To the President-elect, GEN. U. S. GRANT :*

As the senior member of the firm of G. A. Tuttle & Co., publishers and proprietors of the Rutland "Herald," I venture to add my commendation to the

name of Hon. Marcus P. Norton, now of Troy, N.Y., as a man worthy of the confidence of the Government and of your administration.

3595 Mr. Norton is a native of our county, who has, by personal effort, proven himself worthy of the marked confidence and trust which would be expressed and confirmed by your commission to the further service of the public.

Very respectfully;

GEO. A. TUTTLE,

*Editor and Proprietor of Rutland "Herald."*

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ALBANY, Feb., 1869.

*To his Excellency* GEN. U. S. GRANT,

*President-elect of the United States :*

3596 Learning that the Hon. Marcus P. Norton of Troy, N.Y., will be an applicant to you for the appointment as Governor of the Territory of Wyoming, I desire to testify to his eminent fitness for that office, and to unite with others in soliciting in his behalf such appointment. My acquaintance with Mr. Norton extends back to our school days ; and I am not extravagant in asserting that his present eminence, as attorney and counsellor in the highest courts of the Government, is but the legitimate result of the ability and scholarship  
3597 manifested in his earlier years. He is a gentleman of excellent moral and social standing in the community where he has long resided, and for many years has held a high rank among the most public-spirited and enterprising citizens of our State. I believe that his appointment would give great satisfaction to the *Union Republican Party* of this section ; and that the office of governor in his hands would be administered with great ability, thorough integrity, and to the entire acceptance of the people over whom he would preside.  
3598 I hope you will find it for the best interests of the country to appoint Mr. Norton governor of the Territory of Wyoming.

With great respect, your obedient servant,

GEO. G. BATCHELLER,

*Late Candidate for Elector  
18th Cong. Dist. of New York.*



I heartily endorse all that is above written.

I. V. BAKER,

*Supt. Rensselaer and Saratoga Railroad.*

8599

POULTNEY, VT., Jan. 18, 1869.

GEN. U. S. GRANT,

*President-elect United States of America :*

Learning that Hon. Marcus P. Norton of Troy, N.Y., seeks the appointment of governor of Wyoming Territory, I write to say that I have known him intimately for several years, first as student, and latterly as a lawyer eminent in his profession. Besides being a man of talents and acquirements, he possesses, in my judgment, elements of character uncommonly well adapted to such a position in the West; and I commend him to your favorable regard.

3600

Respectfully yours,

JOHN NEWMAN.

*President of Ripley Female College, Poultney, Vt.*

### **Complainant's Exhibit A. D. Lyon,**

2601

J. A. S., EX'R, FEBRUARY 9, 1880.

**United States Circuit Court,**

SOUTHERN DISTRICT OF NEW YORK. IN EQUITY.

THOMAS J. W. ROBERTSON,

*vs.*

3602 THE SECOMBE MANUFACTURING COMPANY.

*Northern District of New York, }  
County of Rensselaer. } ss.*

Cyrus A. Sherwood of the city of Troy, in the county aforesaid, being duly sworn, doth depose and say that he has this day made, and been sworn to, a

deposition in the above entitled action ; and, in addition to what he has therein stated, this deponent further states that he has carefully examined the original  
 3603 model described in that deposition, and made by him as therein stated. Deponent says that such original model is hereto attached, and is the identical model made by this deponent in the winter of 1855-6, for Marcus P. Norton, as stated in his deposition above referred to, including such alterations as were made by deponent in the spring of the year 1857, as specified by him in the deposition above referred to.

The foregoing statements were subscribed and sworn to by this deponent on the nineteenth day of March,  
 3604 1872, before John T. Lamport, a United States Commissioner at Troy, N.Y.

Deponent, in addition to the above, further states, upon his oath, that the alterations above referred to as having been made in the spring of the year 1857, consisted in changing the frame which held the dating-wheels, the detachable chase, and the several indexes, so as to give a downward motion to the same, and print and date on the upper side of the paper instead of on the under side, as stated in my former deposition above  
 3605 referred to. Otherwise the model hereto attached, and each and every part thereof, is the same made by me in the winter of the year 1855-6, as above stated and as stated by me in my former deposition, excepting the detachable chase, which was put in in the spring of 1857, because Mr. Norton desired to print a "way-bill" for post-office use, together with the name of the post-office ; to wit, "Troy, N.Y." For any other changes deponent refers to his former deposition, sworn to the nineteenth day of March, 1872.

3606 CYRUS A. SHERWOOD.

Subscribed and sworn to before me on this fifth day of April, 1872.

A. D. LYON,  
*Notary Public, Troy, N. Y.*

**Complainant's Exhibit C, Knibbs's  
Original Patent,**

3607

J. A. S., EX'R, DECEMBER 23, 1879.

No. 42,920.

THE UNITED STATES OF AMERICA.

*To all to whom these letters-patent shall come :*

**Whereas**, James Knibbs of Troy, N.Y., has alleged that he has invented a new and useful improvement in  
3608 pumps (he having assigned his right, title, and interest in said improvement to himself and Marcus P. Norton of same place), which he states has not been known or used before his application, has made oath that he is a citizen of the United States ; that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used ; has paid into the Treasury of the United States the sum of thirty-five dollars, and  
3609 presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose : —

These are, therefore, to grant, according to law, to the said Knibbs and Norton, their heirs, administrators, or assigns, for the term of seventeen years from the twenty-fourth day of May, one thousand eight hundred and sixty-four, the full and exclusive right and liberty of making, constructing, using, and vending to others  
3610 to be used, the said improvement, a description whereof is given in the words of the said James Knibbs in the schedule hereunto annexed, and is made a part of these presents.

**In testimony whereof**, I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed. Given under my hand, at the city of Washington, this twenty-fourth day of May, in the year of our Lord one thousand eight hundred and sixty-four, and of the independence of the United States of America the eighty-eighth.

[SEAL]

3611

J. P. USHER,  
*Secretary of the Interior.*

Countersigned, and sealed with the }  
seal of the Patent Office. }

D. P. HOLLOWAY,  
*Commissioner of Patents.*

3612 Examined C. E. U.

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**THE SCHEDULE REFERRED TO IN THESE  
LETTERS-PATENTS, AND MAKING PART  
OF THE SAME.**

*To all whom it may concern :*

Be it known that I, James Knibbs, of the city of Troy, county of Rensselaer, and State of New York, have invented new and useful improvements in pumps for steam fire and other engine pumps; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being hereby had to the accompanying drawings, and to the letters of reference marked thereon, which said drawings make a part of this specification.

Like letters represent and refer to like or corresponding parts.

3614 Fig. 1 is a front view of the pump, and showing my invention and improvements hereinafter described and set forth.

Fig. 2 is a vertical and sectional side view, showing the discharge-pipe, or tube, and other parts hereinafter described and set forth.

Fig. 3 is also a vertical and sectional side view, showing the suction or supply pipe, or tube, and other parts connected therewith, and hereinafter described and set forth.

- 3615 The nature of my invention and improvements consists in the employment of a pipe or tube, or its equivalent, by means of which the force or discharge part of said pump is connected to and with the suction or supply part of said pump, so that one, two, three, or more discharge pipes, or hose, may throw streams of water at the same time and stroke of the piston or operation of said pump, without any waste of water, by the opening of a valve, or discharge-pipe, to enable the pump to work successfully and without injury in the throwing
- 3616 of streams of water at fires, &c., &c. Heretofore, in steam fire-engine pumps constructed for the purpose of throwing *two, three, four*, or more streams of water at one and the same stroke of the piston, there has been a great difficulty attending the practical and successful working of the same whenever it has been desirable to throw but one or two, or perhaps three, streams of water, when the pump is constructed to throw four or more streams of water; for the suction or supply of water would in that case be greater than the discharge
- 3617 through the hose-pipes, or tubes, as the case may be, in which one of the remaining discharge-pipes, with the hose-pipe disconnected, or else a waste-water valve, would have to be kept open during the operation of the pump, so as to make the discharge of water the same in quantity as that received through and by means of the supply or suction part of the pump; for if the discharge be not the same, or nearly so, as that of the supply, the pump would become somewhat strained and flooded, and would not, after a while, work
- 3618 or operate. The boiler would also become somewhat flooded, and the engine would cease to work. By the opening of a discharge-pipe or waste-water valve, the discharge would become more equal to that of the sup-

ply; but here is a great waste of water, as well as the flooding of the street, where such engine is used, which is not only very inconvenient to those who operate the said engine at fires, &c., but is also, to some extent, injurious to such steam fire-engine.

By my said invention or improvements all these difficulties are fully obviated. The force part or section of the said pump being connected to and with the suction or supply part or section in the manner and by  
 3619 the means substantially as herein described and set forth, no discharge-pipe or water-valve are required to be open during the operation of the engine throwing but one or two streams of water at one operation or stroke of the piston. The extra quantity of water thrown into the force or discharge part or section of the pump from the suction or supply part or section, and not discharged through the discharge or hose pipes connected therewith, because the same are closed with one or more exceptions, is conducted, by the means  
 3620 hereinafter described, from the said force part or section of the said pump back into the supply or suction tube or pipe connected to and with the said suction or supply part or section of the said pump, and thus the force or discharge part or section of the pump is relieved from any excessive quantity of water, and the waste of water and the flooding of the street prevented, while at the same time the engine and the said pump perform all their respective functions in the most perfect and satisfactory manner without hinderance or  
 3621 obstruction, and the said pump will throw *one, two, three, four*, or more streams of water at the same time, the same being regulated by means of a valve hereinafter described and set forth.

To enable others skilled in the art to which my said invention and improvements relate to make and use the same, I will here proceed to describe the construction and operation of the same, which is as follows: to wit, *A* is the pump cylinder; *A'* is the lower cylinder head; *A''* is the upper cylinder head; *B* is the suction or  
 3622 supply tube; *C* is a screw-cap, which must be removed when the main hose-pipe leading from the hydrant is

- to be connected therewith for the purpose of supplying the pump and engine with water. The said supply hose-pipe will be of the required capacity to supply water sufficient for all the discharge hose-pipes, be the number thereof more or less. *D* is a tube connecting
- 3623 the force or discharge section of said pump to the vertical valve-tube *E*. *F* is a discharge-tube to which the discharge hose-pipe is connected, which is done in the same manner as described in relation to the said suction or supply pipe or hose. *G, G* is a tube, or pipe, connecting the force or discharge part or section to and with the suction or supply part or section of the said pump, for the purposes herein described and set forth. *H* is the valve to regulate the excessive quantity of water to be returned from the force section through
- 3624 the said tube *G, G* to the said suction or supply pipe *B*. If all the hose-pipes are discharging water at the same time, this valve will remain closed. If, however, but *one, two, or three* of the hose-pipes are discharging water at the same time or stroke of the piston, then this valve must be open sufficient to allow of the return of the excessive quantity of water, which cannot be discharged by reason of some one or more of said discharge hose-pipes being closed, because not required in use. *B'* is an air-chamber; *e* is the handle by which
- 3625 the water is shut off or from the discharge-pipe *F* in the usual manner and means; *g* is a valve to let water out at *h*, if desirable in the cleaning of the engine.

Having thus described my said invention, what I claim, and desire to secure by letters-patent, is, —

The returning of any excessive water in the force part or section of a steam fire or other engine-pump to the suction part or section thereof, substantially as herein described and set forth.

- I also claim the connecting of the discharge or force
- 3626 part or section of a steam fire or other engine-pump to and with the suction or supply section thereof by means of the tube *G, G*, and the regulating valve *H*, or any equivalents therefor, substantially as and for the purposes herein described and set forth.

**In testimony whereof**, I have, on this twenty-seventh day of April, A.D. 1864, hereto set my hand.

JAMES KNIBBS.

Witnesses :

3627 C. E. PATTERSON,  
B. MACGREGOR.

**Complainant's Exhibit Norton's  
Caveat,**

AUGUST 27, 1855.

DEPARTMENT OF THE INTERIOR,—UNITED  
STATES PATENT OFFICE.

3628

*To all persons to whom these presents shall come, Greeting :*

This is to certify that the annexed is a true copy from the records of this office.

3629

**In testimony whereof**, I, W. H. Doolittle,  
Acting Commissioner of Patents, have  
caused the seal of the Patent Office to be  
[SEAL] hereunto affixed this sixth day of March,  
in the year of our Lord one thousand eight  
hundred and eighty, and of the independ-  
ence of the United States the one hundred  
and fourth.

W. H. DOOLITTLE,  
*Acting Commissioner.*

UNITED STATES PATENT OFFICE,  
August 27, 1855.

SIR,—I have to acknowledge the receipt of an ad-  
dition to your caveat for "Railroad Ticket Printing-  
3630 Press," which has been duly filed.

Very respectfully yours,

S. T. SHUGERT,  
*Acting Commissioner.*

M. P. NORTON, ESQ.,  
Tinmouth, Rutland Co., Vt.





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